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ABSTRACT

Recent psychological work on the moral development of professional and graduate students has illuminated ways to effectively bring about substantial changes in students' ability to construct a well-reasoned response to moral problems. This document is designed to help educators provide instruction that will enhance students' ability to develop well-reasoned responses to the kinds of ethical problems that are likely to arise in the practice of science. The document has been tailored for the training of graduate students in the biomedical sciences, but the materials are applicable with researchers from a variety of backgrounds. Six cases for discussion are presented along with student instructions describing the rationale and procedures for this exercise. Each case is accompanied with facilitator notes providing a detailed analysis of the ethical issues raised in the case, guidelines for leading discussions, and criteria for evaluating participants' competence in ethical reasoning. The use of these materials is not intended as a full course in research ethics, but could serve as a basis for a course that might be supplemented with didactic presentations on rules and conventions for conducting scientific research in a research institution, discussions of ethical issues not included in this package, guest presentations, discussions of historical cases, and other topics of interest. (JRH)

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**Teaching Research Ethics**

**A Workshop at Indiana University**

*Supported by*
Committee on Institutional Cooperation
Fund for the Improvement of Postsecondary Education
Office of Research and the University Graduate School, Indiana University
Poynter Center for the Study of Ethics and American Institutions, Indiana University

ED 394 843

# Moral Reasoning in Scientific Research

## Cases for Teaching and Assessment

Developed by
Muriel J. Bebeau,
University of Minnesota
with
Kenneth D. Pimple,
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Sandra L. Borden, and
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Indiana University

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December 1995



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These materials were developed for a project entitled "Teaching Research Ethics: A Workshop at Indiana University" (TRE). Funding was provided by the United States Department of Education's Fund for the Improvement of Post Secondary Education, Indiana University's Office of Research and the University Graduate School, the Committee on Institutional Cooperation, and Indiana University's Poynter Center for the Study of Ethics and American Institutions.

Feel free to make copies of the following documents to distribute to your students for classroom use:

- "Developing a Well-Reasoned Response to a Moral Problem in Scientific Research"
- The case studies
- The response sheets for each case study

You may also copy any of the Evaluation Checklists, but **please do not copy** the "Notes for Discussion and Assessment" that accompany each case. Copies are available from us at the address below. We will happily distribute this entire package at cost to anyone who agrees to critique the materials, in whatever degree of detail. **This is a draft,** and your input will be invaluable as we revise and refine the materials. Your requests will also help us keep track of who is using the materials.

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# Introduction

## The problem

Some students in ethics courses cannot see the point of all the disputation and discussion. They have a hard time distinguishing meaningless gobbledygook from carefully crafted moral argument — both seem like just a bunch of words. If such students learn by rote the appropriate solution to one problem, they have a difficult time extending the idea to new situations. They are baffled when two ideals conflict or the law is not perfectly clear about what one ought to do. Such students may have good technical skills and good intentions, but are likely to find themselves in over their heads when confronted with significant moral problems.

For such students, the bedrock for conceptualizing moral problems is deficient. They are likely to have low moral judgment scores. They are strangers to the basic enterprise of constructing a moral argument. The question for the educator is whether such students can be helped.

Recent psychological work on the moral development of professional and graduate students has illuminated ways to effectively and efficiently bring about substantive changes in students' ability to construct a well-reasoned response to moral problems. The procedures and materials included in this instructional package apply the lessons from this research to the teaching of moral reasoning in research ethics.

## Overview of this package

This package of materials is designed to help educators provide instruction that will enhance students'[1] ability to develop well-reasoned responses to the kinds of ethical problems that are likely to arise in the practice of science. It has been tailored for the training of graduate students in the biomedical sciences, but you may find that the materials work with researchers from a variety of backgrounds. The package contains six cases for discussion and instructions for students describing the rationale and procedures for this exercise. To assist the teacher of research ethics who may have limited background in ethics-related disciplines, each case is accompanied with facilitator notes providing a detailed analysis of the ethical issues raised in the case, guidelines for leading discussions, and criteria for evaluating participants' competence in ethical reasoning. Most of the cases included in this package have been tested with student groups, and the instructional strategies have been submitted to empirical testing. The use of these materials is not intended as a full course in research ethics, but could serve as a basis for a course that might be supplemented with didactic presentations on rules and conventions for conducting scientific research in a research institution, discussions of ethical issues not included in this package, guest presentations, discussions of historical cases, and other topics of interest and concern.

---

[1]We use the term "student" broadly to mean anyone who studies. The primary audience we had in mind as we developed this package was graduate students, but it could be used profitably with post-doctoral fellows, faculty members, non-academic scientists, administrators, and other persons concerned with improving skills in reasoning.

## Some background assumptions

We begin with the premise that "ethics can be taught." When people are given an opportunity to reflect on decisions and choices, they can and do change their minds about what they ought to do and how they wish to conduct their personal and professional lives. This is not to say that any instruction will be effective, or that all manner of ethical behavior can be remedied with well-developed ethics instruction. But it is to say — and there is considerable evidence to show it — that ethics instruction can influence the thinking processes that relate to behavior. As with any intervention, it must be carefully targeted to meet an identified need, and it must be an intervention of demonstrated effectiveness.

Even when using programs of identified effectiveness, it may be important to help learners see the need for instruction. This is especially true for adult learners who have many demands on their time, and may be unaware that they lack the bedrock conceptual frameworks for addressing complex moral problems. Strategies for helping learners see the need for instruction are included in the section on assessment. We see assessment (with feedback) as an important instructional technique. Assessment helps students learn, and data generated from the assessment process provides a basis for judging instructional effectiveness. Once the instructional process has begun, other elements are important. Appropriate practice in developing well-reasoned arguments (both orally and in writing) is necessary, as is formal feedback on each attempt—using criteria that are shared before instruction. Activities that enhance the learners' competence at self-assessment and assessment of the adequacy of arguments made by others are also important elements.

We do not claim that radical changes are likely to take place in the classroom or that sociopaths can be transformed into saints via case discussion. But we do claim that significant improvements can be made in reasoning about complex problems and that the effort is worthwhile. We are not alone in this belief: the National Institutes of Health, the National Science Foundation, the American Association for the Advancement of Science, and the Council of Biology Editors, among others, have called for increased attention to training in the responsible conduct of scientific research. Further, our belief is buttressed by empirical evidence from moral psychology. In Garrod (1993), James R. Rest summarizes the "several thousand" published studies on moral judgment and draws the following conclusions:

- development of competence in ethical problem-solving continues well into adulthood (people show dramatic changes in their twenties, as in earlier years);
- such changes reflect profound reconceptualizations of moral issues;
- formal education promotes ethical reasoning;
- deliberate attempts to develop moral reasoning (such as the procedures described in this instructional package) can be demonstrated to be effective; and
- studies link moral reasoning to moral behavior.

## Goals for the teaching of research ethics

**Short-term goals.** One goal is for students to learn the conventions and rules for appropriate research conduct (e.g., rules for submitting a research protocol to an IACUC or Human Subjects Committee; rules for reporting conflicts of interest or assignment of authorship when

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submitting papers for presentation or publication; knowing the rules for attribution of the ideas of others, etc.). However, knowing the rules and conventions of science is not sufficient to ensure responsible research conduct.

**Long-term goals.** Concern for the development of ethical sensitivity, critical thinking skills, and habits that prepare students to effectively resolve the new situations they are likely to encounter in professional life prompts the educator to ask: What thinking processes and ethical behaviors can be influenced by ethics education? James Rest's empirically based Four-Component Model of Morality provides insights into the thinking processes that can be cultivated through ethics education. Reflection on these processes enables educators to formulate goals and design instruction for ethics education.

Rest and his colleagues (1986) posed the question, "When a person is behaving morally, what must we suppose has happened psychologically to produce that behavior?"

> Logically, we would claim that the person must have performed at least four basic psychological processes:
>
> 1. The person must have been able to make some sort of interpretation of the situation in terms of what actions were possible, who (including oneself) would be affected by each course of action, and how the interested parties would regard such effects on their welfare.
>
> 2. The person must have been able to make a judgment about which course of action was morally right (or fair or just or morally good), thus labeling one possible line of action as what a person (morally) ought to do.
>
> 3. The person must give priority to moral values above other personal values such that a decision is made to intend to do what is morally right.
>
> 4. The person must have sufficient perseverance, ego strength, and implementation skills to be able to follow through on his/her intention to behave morally, to withstand fatigue and flagging will, and to overcome obstacles. [Rest 1986:3-4]

For easy reference, the psychological processes can be referred to as **moral sensitivity**, **moral reasoning**, **moral commitment**, and **moral perseverance** or **moral implementation**. Although the processes interact and influence each other, they can be quite independent of each other. That is, a person may be skilled at interpreting the ethical dimensions of a situation (morally sensitive), but unskilled at working out a well-reasoned argument for the moral judgment advocated (moral reasoning), and vice versa. It is also possible for someone to recognize moral problems and be able to devise strategies to avoid moral conflicts, but be indifferent to the moral dimension of life (i.e., lack moral commitment) and, therefore, act on the whim of the moment. Again, a person may be well-developed in terms of the first three components, but lacking in ego strength and perseverance; such a person would be highly susceptible to peer pressure, for example. Or, a person may have a well-developed ego, but lack the interpersonal and problem-solving skills to implement a well-reasoned moral judgment. Ideally, a curriculum in research ethics would provide educational experiences that would promote development of each of these processes.

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**Specific objectives and rationale for these materials.** The purpose of the materials in this instructional package is to assist the teacher of research ethics to improve and assess students' moral reasoning, the second process described above. There are several reasons for focusing on moral reasoning:

- Great diversity in moral reasoning development among students entering graduate programs has been observed (Rest & Narváez, 1994).
- Advanced levels of intellectual development among graduate students means that students are developmentally prepared to make substantial gains in moral reasoning development (King & Kitchner, 1994).
- Substantial gains in moral reasoning in late adolescence and early adulthood are possible (Garrod, 1993).
- Methods for facilitating reasoning development have been extensively researched, more so than methods for promoting growth in the other processes (Bebeau & Thoma, 1994).
- There is a well-established link between moral reasoning and moral behavior (Thoma, 1994).
- Persons practicing a profession are likely to encounter new moral problems that have not been adjudicated; thus skills in reasoning are essential. (See "Developing a Well-Reasoned Argument" for further discussion on this point.)

A detailed description of the history of the development of these materials and evidence of the effectiveness of this method of teaching moral reasoning can be found at the end of this "Introduction" (see page 7).

## How to use these materials

The cases and procedures in this instructional package focus on the elements of a well-reasoned response to moral problems in research ethics and are designed to get students actively involved in the consideration and discussion of ethical issues in scientific research. The suggestions on how to use the cases have been carefully thought out, and the procedures have been tested with several classes of professional school students (See page 9, "History of Development"). Each case, designed specifically to elicit moral reasoning, ends with a question that forces a choice, and students are asked to give reasons for their decision. The criteria presented for evaluating a well-reasoned response prepare students to more effectively critique their own ethical arguments and those of their peers. Procedures for providing feedback to students are recommended. Students who have worked through cases in this way have found the experience enjoyable, have improved their ability to develop a carefully reasoned argument, and have concluded that there are better and worse arguments and that good reasoning and logic are as important to developing a moral argument as they are to developing a sound research proposal.

We do not mean to suggest that methods for promoting reasoning other than our cases and methods might not be effective, but researchers have expended considerable effort to identify effective methods for bringing about change in moral reasoning. Programs (such as the one we devised) that emphasize peer discussion of controversial moral dilemmas and provide concentrated practice in moral problem-solving, stimulated by peer give-and-take, are

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effective. On the other hand, programs and even whole courses that emphasize academic content (e.g., teaching moral theory, or logic, or discussing controversial issues or great books), even when the programs contain innovative and non-traditional features, are not so effective (Rest & Thoma, 1986). This is not to suggest that assigning readings on ethical theory, moral principles, historical cases of fraud in science, institutional rules, professional codes of conduct and the like would not be beneficial. However, we do think that such readings are more meaningful when they help shed light on the resolution of realistic professional conflicts.

The cases and procedures presented here are designed to be used in a minimum of five sessions of about two hours each; these sessions may be incorporated into a course or may constitute a free-standing mini-seminar. It is important to recognize that use of this package does not constitute a complete course in the responsible conduct of research; a complete course would address each of the processes of morality and would use a variety of methods and materials.

The first step is to make your goals in using these materials clear to your students. At least two goals are obvious: To help your students apply their moral reasoning skills to selected issues in research ethics, and to help them conduct discussions that are productive rather than simply windy exchanges of opinion.

To acquaint students with the goals for the case discussions, have them read "Developing a Well-Reasoned Response to a Moral Problem in Scientific Research Ethics" (below). This document explains what is meant by a well-reasoned argument and sets forth the criteria by which their arguments will be assessed. If you have not yet read this document, do so now, before proceeding with these instructions.

Once the students have read "Developing a Well-Reasoned Response," discuss it with them to make sure they understand what is expected of them.

## General suggestions for leading a discussion

Present only one case study per session, and be sure each student has ample opportunity to speak. Present the cases in an order that makes sense in the context of the course; the cases touch on a variety of topics and can be combined in a number of different sequences.

In each session, give students a few minutes to read the case study; then have them fill out Side 1 of the response form. Every case ends with a question of the form, "Should [person] **X** do **Y**? Why or why not?" As explained in "Developing a Well-Reasoned Response," students should make the best argument they can to support their point of view, and they should include all the reasons of which they can think.

Once students have written their responses, lead them in a discussion of the case. The discussion should last at least forty-five minutes, and may be as long as two hours. In the discussion, the teacher should act as facilitator, not judge, and should refrain from expressing his/her viewpoint.

A major goal of the discussion is to make sure that as many perspectives and considerations be aired as possible. It is often best to direct students to begin by making a list of

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parties who have a stake in the protagonist's decision. As this discussion proceeds, students will naturally consider the consequences of alternative courses of action. Once this is accomplished, suggest they make a list of obligations. At this point, references to the codes and conventions and rules will be appropriate. As obligations begin to emerge, help students describe the various conflicts of interests, obligations or values. Resist the impulse to merely label the issue. Encourage the students to describe the conflict.

Following a process like this keeps students focused of the quality of argument, rather than on taking a stand and defending it. The facilitator will want to help students feel secure about expressing their thoughts without fear of ridicule. However, it is important not to give the impression that all answers are equally valid; some answers are better than others, even if no one answer is "the right answer." When a student says something outrageous or off the mark, the facilitator can direct the discussion by trying to clarify the position, asking what others think, asking what might be the consequences of acting on the perspective expressed, what would happen if the perspective became a general rule, etc. If or when facilitators express a point of view, the expression will be most effective if they state all their reasons for the viewpoint before stating the actual viewpoint. If the viewpoint is stated first, students will be thinking up counterarguments rather than listening to each of the reasons.

After discussion, students turn over the response sheet and answer Side 2. In some cases, the discussion will lead students to change their mind about the course of action they advocated on Side 1. In many cases, students will not change their position, but will have heard more reasons to support their initial stance. If their position has not changed and they have nothing to add to or clarify about their Side 1 response (this would be a truly remarkable response), they should make sure they have addressed all the issues, interested parties, etc., so their argument isn't vulnerable to counterarguments. Suggest that students write an integrative essay, not a series of lists; they may wish to begin by describing the ethical conflict (which is the last thing they did in the discussion).

The facilitator should collect and comment on the students' response forms. It is very important to give feedback, especially in the first cases covered. Research has shown that students who get feedback on their responses show much more improvement in the quality of their arguments than students who do not get feedback.

## Assessment of student learning

To help students see the need for instruction in moral reasoning, use one of the following strategies before instruction:

- Administer a formal assessment using a standardized outcome measure such as the Defining Issues Test.[2]
- Ask prospective learners to develop a written argument for one or more of the cases included in this package and evaluate their responses using the criterion checklists

[2]The Defining Issues Test is the most extensively used and validated objective test of moral judgment. It is available from the Center for the Study of Ethical Development, 206-A Burton Hall, 178 Pillsbury Drive, University of Minnesota, Minneapolis, MN, 55455. The Center provides test booklets and a scoring service. A sample is available by calling (612) 624-0876 or writing to James R. Rest at the Center.

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included with the instructor notes.

- Use **an active-learning** strategy to generate criteria for judging the adequacy of a **particular** moral argument. For example, present a grossly inadequate argument, such as the following: "A young teenager was caught shoplifting at a store. When asked why he took the goods, he remarked, 'The store has got all that stuff, and I ain't got nothin'. I was just makin' things even.'" Ask students what is wrong with the argument. With some prompting, they are likely to point out shortcomings of the argument that relate to one or more of the criterion categories: that the young man did not consider the interests of others (the store owner, other consumers, his parents, etc.), the consequences of actions (he could be arrested, embarrass himself and his parents, etc.), the obligations we each have (to follow the law, to respect the property of others, etc.).

## About the "Notes for Discussion and Assessment"

The notes for each case are organized according to the four criterion categories described in "Developing a Well-Reasoned Response:"

(1) Issues and Points of Conflict

(2) Interested Parties

(3) Consequences

(4) Obligations

The purpose of the notes is to provide a narrative discussion of each of the issues, interested parties, consequences, and obligations that emerged as our staff discussed each of the cases. We do not claim to have identified all the relevant issues and arguments that might be offered in support of a position on each case, or even to have expressed them in a cogent way, but we offer our ideas to stimulate your thinking, perhaps to give you something to react to. As you work with these cases, please modify, add to, or refine the ideas. Even if, in the end, you just rephrase the items, we hope you will share your ideas and insights with us.

After the narrative discussion for each case, you will find a checklist summarizing the points discussed under each criterion category. You might wish to add additional items under each category, or simply to rephrase the ideas. The checklist may be used in two ways:

1. If you decide to evaluate student arguments and provide feedback, the checklist helps you keep track of the issues, interested parties, consequences, etc., that each student addressed.

2. If you ask students to critique their own or each other's arguments, the checklist may serve as a guide for reflection and a stimulus for further discussion.

When evaluating arguments, it might be important to point out that an argument that fails to attend to one or more issues, or to project important consequences, or to consider the perspectives of others interested in the decision is not necessarily an indefensible argument, but it might be less persuasive than an argument that has attended to the full scope of issues, interested parties, consequences, etc. Generally, the more comprehensive argument is not only

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more convincing, but less vulnerable to counterargument.

### Suggestions for giving students written feedback

For responses that fail to meet the criteria for a well-developed argument, you might respond with a statement like, "Your argument could be strengthened by addressing the perspective of **X**, or the conflict between **Y** and **Z**."

For points of view that are not defensible, you might pose questions such as:

- What about the responsibility of [person] **A** to [person] **B**?
- What about the responsibility of [person] **A** to do **N**?
- What would happen if . . . ?
- How would you address the counterargument that . . . ?
- What arguments can be made against your position?
- Are you sure the rights of [person] **K** are protected by advocating . . . ?

### About the cases

These cases raise a number of issues in research ethics, though clearly they do not touch on every possible issue. Furthermore, we opted to focus on relatively mundane issues rather than stark or egregious forms of misconduct. Certainly it is possible to have a lively discussion about the blatant fabrication of data, or criminal misuse of funds, or wanton cruelty to animal subjects, or unjustified deception of human subjects. Outrageous ethical misconduct has not been unknown in the annals of science, and we believe that discussion of actual historical cases can be an important component of any course on research ethics.

However, the disadvantage of using extreme examples in fictional case studies like these is that students may have a tendency to dismiss them. "Of course it's wrong to make up your data," they may respond, "but no one would do that." Discussion of historical cases can correct this misperception, but students might still think, "Well, I would never do anything as bad as that."

For these reasons, we have tried to develop scenarios in which students can imagine themselves, or at least their teachers and classmates, being involved. Still, the cases can be used to start a discussion of more extreme and obvious forms of ethical misconduct. Further, it is important to recognize that even though students might not disagree about the most defensible position, they still might have different reasons for their conclusion.

Here is a short description of each case:

**The Jessica Banks Case.** Jessica Banks has just earned her Ph.D. and wants to take her lab notebooks when she leaves for her new job. Her lab director, Brian Hayward, objects. She wonders what to do.

**The Charlie West Case.** Charlie West, a post-doctoral fellow, is tempted to use in his grant proposal the background section of someone else's grant proposal. (Linked to the Diane Archer case.)

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**The Diane Archer Case.** Professor Diane Archer discovers plagiarized materials in a grant proposal submitted by Charlie West, a post-doctoral fellow she knew when he was a graduate student. (Linked to the Charlie West case.)

**The Marty Brown Case.** Professor Marty Brown wants to exclude what he sees as anomalous data from a study he is conducting.

**The Bob Bailey Case.** Bob Bailey is a graduate student whose work is not going well. He blames his troubles in part on the romantic relationship that has developed between his lab director, Peter Martin, and one of his classmates, Sarah Stern. Bailey is concerned that their relationship is (a) bad for Stern and (b) bad for the lab, and he is considering bringing a complaint to the department chair.

In an extension to this case, Bailey brings his complaint to the chair, David O'Donald. The chair dismisses the complaint because the relationship appears to be voluntary; he tells Bailey to get to work.

**The Jenny Ito Case.** Graduate student Jenny Ito is instructed by her lab director, Chris Holzer, to apply bacteria to pins inserted in rabbits to test the rate of infection for surgical pins; this is not in the protocol.

## History of Development

The teaching and assessment strategies presented in this package were initially developed and tested over a ten-year period (1983-93) with dental students enrolled at the University of Minnesota (Bebeau, 1994). The need for ethics instruction was demonstrated by the quality of arguments students developed for common problems arising in the profession and by responses to a standardized test of moral judgment, the Defining Issues Test (DIT). The DIT is regularly used as an outcome measure. When administered at the beginning of the curriculum, the test results help students see the need for instruction. Administered at the end of the four-year curriculum, results help students evaluate their personal growth, and pretest/posttest comparisons help faculty evaluate instructional effectiveness.

In 1983, Minnesota dental students participated in an ethics course in which they discussed cases similar to the cases included in this curriculum package. Before discussion, students were asked to take a tentative position in writing, to encourage individual reflection on the case. The two-hour discussions tended to be lively, and almost all the students said they enjoyed them and thought the one-credit course was worthwhile. However, dental faculty who led the discussions noticed that the well-thought-out reasons expressed during discussion were not consistently reflected in the essays students wrote afterward. Also, there didn't seem to be much improvement in the quality of student essays as the course progressed. Actually, the instructional procedures probably contributed to the lack of observed improvement. During the initial years of the curriculum, essays were graded at the end of the course. Feedback on the quality of written responses was neither systematically given, nor was it tied to explicit criteria. Even though the graders had criteria in mind when they judged student essays, these criteria were not shared with students ahead of time.

The need for validated methods for assessing classroom performance was highlighted by

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occasional student reactions to learning their DIT pretest score and by their reactions to course grades. With respect to DIT scores, students often asked (usually in a challenging way): "Who says higher is better?" With respect to course grades, these reactions were common: "This course should be pass/fail. Grading arguments is purely subjective. You are grading our values. You have no right!!!" or "This course is a waste of time. There are many right answers to moral problems. Who's to say that one opinion is any better than another? We'd be better off spending our time in labs." Although such views were not widespread, faculty felt the concerns expressed ways of thinking that required attention.

To address the relativistic perspectives expressed by students and to improve performance, Minnesota faculty looked to the literature for examples of the ways moral arguments are assessed in exemplary ethics courses. Although ethics instructors claimed to evaluate the adequacy of student arguments, criteria for doing so were not explicitly stated, nor were data presented on course effectiveness. When evaluation data were presented, these data were limited to student perceptions of the value of instruction (Miles *et al.*, 1989).

One study by Howe (1982) illustrated that courses could bring about improvements in the quality of written essays. However, conclusions were based on pretest/posttest differences reported by one evaluator who scored all essays. Although the evaluator was blind to whether the essay was written before or after instruction, the study did not establish interrater reliability (i.e., that two ethicists would assign scores that would rank-order the essays similarly), nor did it establish face validity (i.e., that other ethicists would agree that these criteria were the criteria one should use to evaluate the quality of moral argument). The criteria described by Howe were general in nature, so it seemed likely that face validity could be established. However, for dental faculty, it seemed doubtful that such general criteria would be useful to students trying to learn how to develop a well-reasoned argument, or to persons with limited training in ethics who might wish to apply them.

The criteria checklist developed for the Minnesota project, and included in this package, emerged from discussions between the course developer (an educational psychologist) and a philosopher colleague. The philosopher had been employed to evaluate students' arguments and assign course grades. Initial efforts to validate criteria focused on establishing interrater reliability for the four general criteria. The developer and philosopher were able to achieve consistency in rating and ranking student essays (Bebeau, 1990), provided they had established agreement on the issues, interested parties, consequences and obligations embedded in each dilemma. To ensure consistency across essays and across years when the essays were graded, a template was devised for each case that listed the issues, interested parties, and so on, and provided rules for assigning points. Facilitator notes for each case were rewritten to provide instructors with a detailed discussion of each of the issues, interested parties, consequences, and obligations.

## Evidence of Effectiveness

The decision to engage Minnesota dental students in ethical reasoning was based on three pieces of information. First, a cross-sectional comparison (Bebeau & Thoma, 1994) of three classes of entering freshman (N = 385) with two classes of third-quarter juniors (N = 265) on the DIT was conducted before implementing the ethics curriculum. There were no significant

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differences between groups, suggesting that the technically oriented dental curriculum had little impact on moral reasoning development. Second, an examination of the range of DIT scores indicated considerable variability (an average SD of 13.25), with up to 20% of the students scoring below the norm for high school graduates. Third, written responses to dental ethical dilemmas (Bebeau, 1990) indicated that even advanced students were not equally able to develop defensible arguments for dilemmas commonly encountered in dental practice. Furthermore, many students believed that judgments about the adequacy of ethical arguments are arbitrary and that ethics could not, and perhaps should not, be taught.

Significant improvements in performance (averaged over two or more years) resulted from the addition of feedback after each essay, and later from the addition of a lecture and distribution of a paper entitled "Guidelines for Developing a Well-Reasoned Argument" before small group dilemma discussions (Bebeau, 1994). To date, the influence of having criteria over not having criteria (the circumstance that existed before 1985) has not been systematically analyzed, but it appeared that presenting criteria helped reduce perceptions that ethical judgments are arbitrary. However, it did not improve the quality of written arguments. In an analysis of the impact of feedback on performance across five essays (94 students who were not given feedback after each essay were compared with 158 students who were), the most dramatic improvements occurred with written feedback given after the first essay; improvements thereafter were incremental, though not significantly so (Bebeau, 1990). The main effect of feedback seemed to be reduction of variance.

To assess the impact of the curriculum, pretest and posttest DIT scores for eight classes of students who participated in the dental ethics program were compared (Bebeau & Thoma, 1994). Unlike the cross-sectional data obtained before the ethics program's implementation, seniors scored significantly higher than freshmen. Furthermore, the overall effect size ($\underline{d} = .36$) compared favorably with the value obtained in a meta-analysis of 23 intervention studies using dilemma discussion techniques. The findings suggest an increased use of principled arguments associated with implementation of the ethics program.

Based on experiences with ethics teaching in the dental curriculum, it is evident that: (1) professional school students need instruction in ethical reasoning; (2) dilemma discussion is effective in enhancing reasoning of professional school students, but criteria and feedback are essential for overcoming students' relativistic perspectives and bringing about performance improvements; (3) performance in courses can be reliably assessed; and (4) students value instruction in moral reasoning. Students not only give positive ratings on anonymous course evaluations, but an analysis of students' self-assessment of learning, completed by each student after each course over the ten-year period, shows — as a function of instructional improvements — a reduction in the number of complaints about the grading and increased frequency of comments such as, "It never occurred to me that there were criteria for evaluating the adequacy of moral argument. I'm now much better at evaluating my own reasoning and the arguments of others."

Work on establishing construct validity and interrater reliability of the criteria and assessment strategies is ongoing. One question of interest is, of course, the transferability of the methods and assessment techniques to other settings.

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## Applications to the "Teaching Research Ethics" Project

In 1993, staff at the Poynter Center decided to explore the applicability of the Minnesota teaching and assessment strategies for the Teaching Research Ethics project. Poynter Center staff participated in a tryout of the assessment methods. Before examining the criteria for developing a well-reasoned argument, participants were asked to (1) read the stimulus case (two cases were provided), then (2) read the sample student responses (three were included for each case), and (3) rank them, noting characteristics that distinguished them. The responses represented different levels of adequacy of moral argument (in the view of the Minnesota group's criteria), but differences were not obvious (i.e., responses were similar in length and in clarity of expression, etc.). After the ranking exercise (in which there was agreement on rank ordering, though not necessarily consistency in reasons), the group applied the criteria and scoring templates to a second set of six responses.

As a result of this exercise, staff at the Poynter Center, most with training in ethical analysis, were convinced enough of the validity of the criteria to adopt the teaching and assessment method for the Teaching Research Ethics project. The cases included in this package were developed by the TRE staff. Most have been tested with groups of research students.

The "Notes for Discussion and Assessment" are the product of a group process. Staff individually reflected on each case and submitted drafts of the issues, interested parties, consequences and obligations. One individual then incorporated the ideas into a draft for group discussion. The current notes for each case are the result of several rounds of discussion and revision.

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# Developing a Well-Reasoned Response to a Moral Problem in Scientific Research[1]

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## Introduction

Every day you make decisions about what to do. Some decisions are just matters of preference that have no moral implications, like whether you would rather wear a red or green sweater, or whether you would prefer an apple to an orange. Even technical questions, such as whether to use a flask or a beaker, or a pair of pliers or a wrench to accomplish a given task, may be simply matters of preference. However, when the exercise of preference somehow affects the welfare of others, moral questions arise. One of the problems for persons entering a profession, such as science, is that they may not recognize when choices about technical matters have moral implications. One purpose of instruction in research ethics is to alert future professionals to such situations.

In most cases, when moral questions arise, you do not wonder what you should do. You clearly know what you ought to do — even though you may feel compelling pressures not to follow through and do it. You may question whether you can escape the consequences of not following through, but you do not question what is right. As an educated person, you rely on knowledge of existing laws or even intuition to tell you what to do, without necessarily reflecting on why a given act is right or wrong. As law-abiding citizens, we recognize that we can be held accountable for our actions and that even ignorance of an existing rule or law does not exempt us from its consequences, should we break it. For the most part, each of us functions pretty well without giving much thought to the reasons a particular act, such as stealing or cheating, is wrong. Knowing the rules and laws is essential for maintaining a law-oriented society, but reflecting on the reasons for those rules and laws may not be.

However, there are some situations and contexts in which a well-developed ability to reflect on moral issues and to undertake ethical reasoning is crucial. For professionals in science, as well as in other fields, skills of moral reflection are important — perhaps even essential — because new moral problems arise as technology advances, as societal expectations change, and as the various scientific disciplines evolve. Sometimes professionals face moral problems that were not anticipated by the profession's existing codes of conduct and are not explicitly stated in laws and/or procedural rules. Yet case law shows that professionals

[1] The author acknowledges the contributions of Kenneth D. Pimple, Karen M. T. Muskavitch, and David H. Smith, members of the Teaching Research Ethics Team, Poynter Center for the Study of Ethics and American Institutions, Indiana University. This paper was adapted from an earlier work, "Developing a well-reasoned argument for a moral dilemma," designed for the University of Minnesota dental ethics curriculum. The process for discussion and criteria for assessing the moral arguments presented herein have been extensively tested with several cohorts of Minnesota dental students.

can be held accountable for their decisions.[2] Professionals are expected responsibly and knowledgeably to apply moral principles to arrive at morally defensible positions — even on novel and unprecedented issues.

If we think that the work of professional scientists is important and that they should be held accountable for actions that affect the welfare of others, we must ask what values and norms undergird the practice of science, and by what standards professional practice should be judged. Professions, including scientific professions, differ in the extent to which they have made explicit the norms and values that govern professional practice. Some professions, such as engineering, law, medicine, dentistry, and psychotherapy, have explicit codes of conduct, describing how the profession's ideals translate into specific expectations and obligations. Scientific societies (with the possible exception of medical science) tend to simply set forth the organization's aspirations or ideals. For instance, in science, rather than speaking of professional obligations, professionals refer to traditions or norms of practice. In its report, the National Academy of Sciences Panel on Scientific Responsibility and the Conduct of Research observes that:

> The community of scientists is bound by a set of values, traditions, and standards that embody honesty, integrity, objectivity, and collegiality. These values are reflected in the particular principles and practices characteristic of specific scientific disciplines.[3]

Scientists need practice in how to apply these values when formulating a response to one of the practical ethical problems that frequently arise in the course of doing and presenting scientific research. Some research indicates that skills of ethical reasoning are also a necessary condition for excellence in practical problem solving.

For these reasons, we have concluded that training in decision making for young scientists should devote considerable effort to developing and strengthening skills in ethical reasoning or reflection. In turn, each person's skills can be judged on the basis of his or her ability to develop a well-reasoned response to the kinds of moral problems scientists encounter in professional life.

## Judging responses to moral problems.

How does one decide whether a response is well-reasoned? What criteria apply? Can the adequacy of a response to a moral problem be reliably judged? These are questions of concern to students in an ethics course. Responses can be judged based on these criteria:

[2] One of the more stunning examples is the 1976 case of Tarasoff v Regents of the University of California (17 C.3d425; [3] Cal.Rptr. 14,551 P.2d 334), wherein psychotherapists were held accountable for failing to warn Ms. Tarasoff that her ex-boyfriend was making life-threatening statements about her during his counseling sessions. In a wrongful death action brought against the Regents and psychotherapists at the university hospital by Tarasoff's parents, the California Supreme Court ruled that the duty to warn took precedence over the duty to protect the client's confidences, and held the professionals accountable — arguing that they should have recognized the limitation of the duty to confidentiality — even though their profession's code of ethics was not explicit on this point. As a result, ethics courses for mental health professions routinely include cases patterned after Tarasoff.

[3] Panel on Scientific Responsibility and the Conduct of Research. Committee on Science, Engineering, and Public Policy. National Academy of Sciences, National Academy of Engineering, Institute of Medicine. *Responsible Science: Ensuring the Integrity of the Research Process*, Volume 1 (Washington, D.C.: National Academy Press, 1992), p. 1.

(A) Whether the response addresses each of the **issues and points of ethical conflict** presented in the case or problem;
(B) Whether each **interested party's** legitimate expectations are considered;
(C) Whether the **consequences** of acting are recognized, specifically described (not just generally mentioned), and incorporated into the decision; and
(D) Whether each of the **duties or obligations** of the protagonist are described and grounded in moral considerations.

These are the criteria generally used to evaluate the adequacy of responses to ethical problems. Persons with training in ethical analysis can reliably rate and rank the adequacy of the arguments for a chosen response. The purpose of this paper is to help you understand the criteria for judging the adequacy of moral arguments so you can develop a strong argument in defense of your position on the problem presented to you.

## Case discussion

Before saying more about the criteria, let us address the process for a case discussion.

**Step I.** In a classroom setting you will be presented with a case study and you will be asked to take a tentative position (e.g., "Yes, the protagonist should do something," or "No, the protagonist should not do something"). In each case, you will focus on the protagonist and tell why (on SIDE 1 of your response form) he or she should or should not do something.

As you read the problem, you may find yourself compiling a mental list of the issues involved, like data ownership and access, collegial interactions, plagiarism, responsible use of animals, authorship, confidentiality, data falsification, and the like. As you describe an issue, try to address the point of conflict that each issue represents, e.g., a conflict of interests, rights, or needs of two or more interested parties, conflicting obligations of the protagonist to other parties, or conflicting values for the protagonist.

When you develop your response, focus on the <u>reasons</u> the protagonist should or should not do something. Do not just pronounce an act as ethical or unethical; tell <u>why</u> you think so. In considering why an action is acceptable or unacceptable, it may be helpful to consider:

- Who has a stake in the action?
- What might the consequences of the action be?
- What obligations might the protagonist might have?
- What professional norms and values give rise to those obligations?

Note that each problem usually contains two or more issues; you should try to describe all of them.

**Step II.** Participate in the discussion. During the discussion, you will have an opportunity to hear what others think and learn what additional conflicts, interested parties, consequences, and obligations they may have identified. You will also have an opportunity to ask questions of the facilitator. Use this opportunity to expand your understanding of the issues, gain more information, and rethink your initial response to the problem(s) presented by the case.

**Step III.** When the discussion is finished, use SIDE 2 of your response form to either strengthen or reformulate your response. At this point, you may change your mind on the

position you initially took if compelling arguments have been made to convince you to do so. You may rewrite or simply refine your response. Note: You need not repeat points made on SIDE 1, and you need not be concerned about errors of fact or reasoning made on SIDE 1, as long as you address the error on SIDE 2. Notice that your response will also be evaluated according to your willingness to reassess your position. Even if you do not change your mind about the correctness of your position, you ought to be able to provide clearer reasons for maintaining that position. **If you do not change your mind about your position and no new arguments to support your position occur to you after discussion, you still should not leave SIDE 2 blank. You should at least address the arguments raised for other positions and explain why these arguments are insufficient to make you change your mind.**

Obviously, in some situations, there is little disagreement that one position is more defensible than another, so it would be unlikely that people would disagree on the position itself. Responses are evaluated based on the logical adequacy of the argument, not on whether you picked the "correct position." Remember, however, that one of the marks of a good scientist is the willingness to change one's mind in the face of compelling reasons. It is not a virtue to "stand one's ground" when the evidence suggests a change of position is warranted.

**Step IV.** Turn in your paper for evaluation by your instructor. Your response will be read, evaluated, and returned to you with suggestions as to how you might further strengthen your argument.

## Applying the criteria

The following are some additional suggestions to help you apply the criteria as you analyze an ethically problematic situation and formulate a reasoned response.

**1. Issues or points of conflict.** To provide a convincing ethical analysis, you will want to move beyond naming the issue (e.g., data ownership and access, plagiarism, etc.) to describing the nature of the moral conflict. What constitutes an ethical conflict? A dilemma, by definition, is a situation in which rights or obligations of interested parties conflict. For example, there's a famous hypothetical case called "Heinz and the Drug." The scenario is this:

> Heinz's wife is dying. A cure is available from a druggist in Heinz's town, who is the one who discovered the drug, but the druggist charges much more for the drug than it costs him to make it, and much more than Heinz can afford to pay. Heinz can't raise the money and the druggist will not agree to let him pay later.

The dilemma is whether Heinz should steal the drug to save his wife's life. One issue in this case has to do with property (whether the druggist's right to his property should be respected), and another has to do with life (whether Heinz is obliged to act to preserve his wife's life). When we examine the case in terms of conflicting rights, Heinz's wife's right to her life is in conflict with the druggist's right to his property. Heinz tried to resolve the problem without compromising either the druggist's or his wife's rights and was unsuccessful. He exhausted his ability to resolve the problem and is considering which of his conflicting obligations (to save his wife's life or to respect the druggist's property) should take precedence.

Real-life dilemmas often present choices between equally unfavorable or disagreeable alternatives. Consider the case of the researcher considering data enhancement of preliminary findings to assure continued funding for his research lab. He sees a conflict between his obligation to report his data honestly and his obligation to secure enough funds to keep his lab technicians employed. You might reason that honesty is a more important consideration than maintaining jobs for lab technicians, but such practical considerations can influence professional judgment.

Note that identifying the points of ethical conflict is often one of the hardest jobs in ethical analysis. Most people find it easier to begin by considering interested parties, consequences, and obligations before trying to describe the issues more fully.

**2. Interested parties.** Skills in perspective-taking are called for by this criterion. Other parties, besides those directly mentioned in the case, may have a stake in the protagonist's decision. You might think of interested parties in progressively larger groupings, from the person facing the ethical problem, to the person(s) immediately affected (such as that person's students, teachers, or research subjects), to the people in the relevant institution (the laboratory or university), to the scientific community and society in general. Consider the reasonable expectations (rights) of each interested party. Frequently, consideration of the interested parties will bring more issues to mind.

**3. Consequences.** For each action considered, there are often several possible outcomes. The challenge in identifying consequences is not to identify every remote consequence, but to identify those that have a good probability of occurring, or those that would have very serious consequences even if the probability of occurrence is not particularly high. For example, the possibility that someone might die due to the release of a small amount of a toxic substance during an experimental procedure may be relatively remote, but the consequences would be so devastating that the potential benefit may not even be worth a remote risk.

When considering consequences, be sure to consider, in turn, each of the interested parties and the probable consequences of the proposed action on those parties. When considering consequences to the protagonist, keep in mind that consequences may be multifaceted. On the one hand, he or she might get caught in an unethical act and face a lawsuit, loss of funding, loss of reputation, or other serious negative consequences. On the other hand, he or she may get away with an unethical act and get a publication or grant more easily and quickly than if he or she had acted ethically. But whether or not the act is detected, engaging in actions we believe are wrong undermines our sense of integrity. The effects of an action on a person's character may appear to be minor in the short run, but often have a cumulative and debilitating effect on one's self-confidence, self-esteem, and habits — each time we reap the benefits of questionable acts and successful avoidance of the negative consequences, we enhance the probability that these acts will be repeated.

**4. Obligations.** For each case, consider primarily the obligations of the protagonist toward the various interested parties. It is sometimes tempting to dismiss the obligation of the protagonist when some other person fails to live up to his/her moral obligation. For example, the protagonist may reason as follows:

Everyone else fudges data points, and I'm competing with them for grants, so I have to

*(read: am morally justified to)* fudge my data, too.

One party's failure to live up to his/her moral obligations can have an impact on another party's moral obligations, but this kind of reasoning often amounts to nothing more than a rationalization — an excuse to do whatever one wanted to do in the first place — without real regard to the moral questions at hand.

When writing about the obligations of professionals such as scientists, it is not enough to say that someone has a duty to do "x." You must say <u>why</u> the professional has that duty. That is, you should refer to the moral justification in terms of values, principles, character, or outcomes. For example, consider the case of a researcher who is considering fabricating additional supporting data to speed publication of an exciting preliminary result that could be very important in the treatment of viral disease. In such a case, your reasoning might go something like this:

> The scientist should not fabricate the data. Every scientist has a duty to report data truthfully because honesty is one of the most fundamental values of science.

When describing ethical obligations, consider the various responsibilities of scientists. One responsibility is to achieve at least the minimum standards of technical competence, and maintain those standards during the course of professional practice. For example, scientists need to know how to calibrate their instruments accurately. If you do not know how to calibrate a thermometer properly, your experiment may be completely invalid. Given the right context and consequences, lack of technical competence can become a moral issue. But even when we do know how to calibrate instruments, there are honest mistakes, such as forgetting the calibration on one particularly hectic day, or mistakenly assuming your assistant did the calibration.

Each of us is fallible. This fact of human nature gives rise to another responsibility: In addition to achieving and maintaining competence, one is expected to engage in responsible research practices, like replication, proofreading, and peer review to guard against error. Responsible research practice also includes the obligation to correct one's technical errors, as well as errors of interpretation and judgment.

In order to maintain the integrity of the research enterprise, almost every scientist will, at some point, be asked to make distinctions: on one level, between honest error and honest differences of interpretation and judgment; on another level, between negligent acts (e.g., mistakes resulting from sloppy experimentation, poor scholarship, and other forms of negligent behavior) and intentional acts and misrepresentations, such as fabrication, falsification, or plagiarism. Scientists have a responsibility to colleagues, to the research community, and to society to participate in the monitoring of research practice. This means that the professional must be knowledgeable about the process and procedures for dealing with allegations, and responsibly exercise his or her obligations to the accused and to the institution or scientific society in which the alleged misconduct is discovered.

By considering this partial listing of the responsibilities of scientists, one gains an appreciation of the complexity of moral issues that can arise in scientific practice.

## Summary

In this paper, we have suggested that professionals, including professional scientists, have a particular responsibility to have well-developed skills of moral reasoning. We briefly set forth the following four criteria for evaluating the adequacy of a moral argument:

- Whether the response addresses each of the ethical issues and points of ethical conflict presented in the case or problem.
- Whether each interested party's legitimate expectations are considered.
- Whether the consequences of acting are recognized, specifically described (not just generally mentioned), and incorporated into the decision.
- Whether each of the obligations or duties of the protagonist are described and whether the obligations are grounded in moral considerations.

Next, we described a four-step process for discussing case studies in research ethics in the classroom:

Step I. Writing your response to the case.
Step II. Participating in discussion.
Step III. Refining your response.
Step IV. Turning in your response for assessment and feedback.

We concluded with an in-depth discussion of the four criteria, which we offer as a guide for developing a well-reasoned response to a moral problem.

## Five-Case Evaluation Checklist

Date: _____

Student's Name: _____

Facilitator's Name: _____

The following checklist will be used to evaluate your written responses to each of the cases presented and discussed.

| | | Case # | | | | |
|---|---|---|---|---|---|---|
| | | | ___ | ___ | ___ | ___ | ___ |
| 1) Describes the ethical issues. | (5 pts) | | ___ | ___ | ___ | ___ | ___ |
| 5 = describes all pertinent issues | | | | | | | |
| 1 = suggests only the most obvious issue | | | | | | | |
| 2) Identifies the interested parties. | (3 pts) | | ___ | ___ | ___ | ___ | ___ |
| 3 = names all those directly affected | | | | | | | |
| 1 = suggests only the person most affected | | | | | | | |
| 3) Identifies the consequences of acting. | (4 pts) | | ___ | ___ | ___ | ___ | ___ |
| 4 = foresees several possible outcomes | | | | | | | |
| 1 = sees only the obvious outcome | | | | | | | |
| 4) Identifies the relevant obligations. | (5 pts) | | ___ | ___ | ___ | ___ | ___ |
| 5 = describes obligations in terms of their basis in moral considerations | | | | | | | |
| 1 = simply alludes to obligations without rationale | | | | | | | |
| 5) Shows willingness to reassess position. | (3 pts) | | ___ | ___ | ___ | ___ | ___ |
| 3 = provides clearer reasons for maintaining Side 1 position or states reason(s) for changing position | | | | | | | |
| 1 = changes or maintains position with no rationale given | | | | | | | |
| **TOTAL:** | (20) | | ___ | ___ | ___ | ___ | ___ |

# The Jessica Banks Case

Jessica Banks, a Ph.D. student in Professor Brian Hayward's lab, has recently defended her dissertation and is now ready to file it and leave for her new job. During her second year, when starting research in Hayward's lab, Banks divided her time among three projects. Then in her third year, after consultation with Hayward, she decided to continue and expand upon one of the three lines of investigation for her dissertation research. This was also the project most closely related to Hayward's grant at the time. Later, Bank's experimental plan and early results were included in Hayward's grant renewal. The other two promising lines of research were left incomplete.

Bank's new job is a tenure-track position in a mid-sized western liberal arts college. Shortly before leaving for her job, she comes into the lab to pick up her notebooks. Although her new faculty position will place a heavy emphasis on teaching, she is looking forward to continuing to do some research as well. In particular, she is eager to pick up where she left off with the two uncompleted projects she worked on before.

Professor Hayward meets Banks on her way into the lab, and their genial conversation abruptly changes when she mentions she has come to take her notebooks.

Hayward exclaims, "You can't take those notebooks away — they belong to the lab."

Banks is confused. "But I did the work, and I wanted to follow up on it. I can't do that without the notebooks."

Professor Hayward is adamant. "I'm sorry, but you should understand this. This lab is a joint enterprise, and all the work you did was funded by money I brought in via grants. The notebooks don't belong to you, nor to me; they belong to the lab, and the work will be continued in this lab. I've already talked to one of the new students about working on those projects this fall."

Banks, seeing her plans fall apart around her, protests, but Hayward is implacable. After a few minutes, she stalks away, without the notebooks.

Later that afternoon, Banks gets together with her classmate Paul Larson, and during their conversation, she tells him about her run-in with Hayward.

"Look," says Larson. "Hayward has no right to deny you access to the information in the notebooks. Even if the books should remain in the lab, you did the work that generated all the data."

"I know!" says Banks. "But Hayward would't listen to that argument when I made it."

"Here's my suggestion," says Larson after some reflection. "Just stop by the lab and photocopy the books some time during the weekend. I happen to know Hayward will be out of town, so he'll never know. That's the fair thing to do: He gets to keep the notebooks in his lab, and you get a copy of the data you collected."

Banks seems uncertain, but says she'll think about Larson's suggestion and decide before the weekend.

**Should Banks photocopy the notebooks? Why or why not?**

**The Jessica Banks Case** Name: _____
**Side 1** Date: _____

**Should Banks photocopy the notebooks?** _____ yes _____ no
**Why or why not?**

**The Jessica Banks Case** Name: _____
**Side 2** Date: _____

**Should Banks photocopy the notebooks?** _____ yes _____ no
**Why or why not?**

| Criteria | |
|---|---|
| Issues | |
| Int'd Parties | |
| Consequences | |
| Obligations | |
| Reassess | |
| **TOTAL** | |

## Notes for Discussion and Assessment

## The Jessica Banks Case

This case illustrates the tension between two important and legitimate values in scientific research: independence of inquiry and cooperation. On the one hand, scientists value their independence; that is, being able to pursue any line of inquiry they wish (regardless of whether others are already working in that area) and being able to maintain control over their ideas and data until they have a completed project ready for publication. On the other hand, scientists place a high value on the collegial sharing of information and research materials, as well as on informal discussions in hallways, on telephones, and at meetings. In addition, collaborative efforts both within and between disciplines are becoming more frequent and are encouraged by many granting agencies. At the core of this tangle of competing values is the prestige associated with priority of discovery. This can be lost if one is scooped by a competitor and may also be diminished by having the recognition spread over several labs. Banks can be viewed as appealing to cooperation in her desire to take the notebooks with the preliminary data — but so can Hayward when he essentially asks Banks to respect his prior claim to a project he wants to continue. Then again, in saying that she plans to continue the project, Banks is appealing to independence of inquiry, as is Hayward when he refuses her request in order to maintain control over the data. The issues can be further broken down as follows:

**1. Issues and Points of Conflict**

**Banks's (perceived) right to the notebooks *vs.* Hayward's (asserted) right to keep the notebooks in his lab.**

The conversation presented in the case illustrates common misperceptions about ownership of research data, as well as the more challenging questions related to the ownership and control of intellectual property (i.e., plans, ideas, and projects not yet brought to fruition). Banks's initial assumption, that she could take the notebooks, and her subsequent interpretation of the conversation with Hayward reveal a lack of understanding about the legal issues (which are not open to debate) surrounding ownership of the products of research. Hayward correctly asserts that the notebooks belong to the lab. When Banks gives reasons for wanting the notebooks — to continue a line of research she began earlier — Hayward asserts a proprietary interest in the lines of research initiated in the lab (and supported by his grants) and his intentions to continue the projects with the help of new students. Banks's conclusion from the conversation, which she later discusses with a classmate, is that Hayward not only intends to deny her access to the notebooks, but also to the continuation of projects she worked on earlier.

Banks and her classmate believe that she has a right to access to the data in the notebooks as well as to continue projects she started in Hayward's lab after she moves on to her new job. Although Hayward did not explicitly state that she could not have copies of the notebooks, Banks and Larson seem to assume this. However, ownership and access are not synonymous. Banks and Larson not only have an unclear understanding of data ownership and access issues, but seem unaware of the terms of their "employment" as students and faculty. The

legal "works for hire" principle[1] states that an institution, not its employees, owns the rights to its employees' written products or other forms of expression, including primary research data. Banks and her classmates might benefit from reading Fishbein's article on this matter and reviewing their institution's policies related to intellectual property, as well as the policies of the NSF or NIH.

**Banks's (perceived) right to pursue the research she worked on earlier vs. Hayward's (implicitly asserted) right to control those lines of research.**

This case raises a more problematic issue than who should keep the notebooks, namely, who has the stronger claim to the lines of research the data represent. To what extent is Hayward justified in preventing Banks from pursuing a line of research begun in his lab? Even if Banks is granted access to the data, what right would she have to use the data without attribution to Hayward? Does he have a legal or moral claim to an incomplete line of research? What are the institutional policies regarding the questions of whether investigators or institutions own projects in progress?

Whereas the ownership of material objects, such as data sets, is fairly well-prescribed by institutional policies and laws, ideas and/or intellectual property are not easily controlled. Goodman[2] points out: "The suggestion that an idea might be intellectually or commercially controlled by a single individual overlooks the common fact that ideas have histories and genealogies: a number of people work simultaneously on the same problem or parts of the same problem." Whether Banks has a claim to the ideas that were initiated by Hayward's grant depends, in part, on the nature of her contributions and their shared perception of her contributions. Did she simply carry out a research plan designed by Hayward, or was she a partner in the design?

**Banks's interest in establishing her independence (by continuing projects she began in Hayward's lab) *vs.* her interest in maintaining collegiality and personal integrity.**

Banks is eager to get a good, quick start on her career by continuing lines of research she began earlier as a graduate student. The fact that she is tempted to secretly copy the lab notebooks implies that she thinks she can continue this research without Hayward's help or cooperation. However, even if she no longer needs advice from Hayward, she will still need his good will because he most probably will be asked to write letters supporting her subsequent promotions.

Aside from the issues raised above concerning Banks's right to the notebooks, the data, and the lines of research, an important question for Banks is whether she has established sufficient competence to function without the mentoring and support of Hayward. Her need for maintaining collegiality may be greater than she realizes. Students often begin their research careers by working on projects initiated by faculty. As their research abilities develop, they are expected to develop their own research interests and gradually establish their independence. One criterion for awarding advanced degrees is the ability to complete a research project (thesis or dissertation) that represents an original contribution to the literature. Be-

[1]Fishbein, Estelle A. Ownership of Research Data, *Academic Medicine*, 66(3), 129-133, 1991.

[2]Goodman, Kenneth. Intellectual Property and Control. *Academic Medicine*, 68(9), S88-91, 1993.

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cause students work under the supervision of a mentor, there is the potential for differences of opinion as to the origin of ideas in the final product. It is not uncommon for disagreements to arise about the ownership of ideas in students' work.

One of the common ethical dilemmas that arises in research is the claim by students that their mentors published or otherwise used the students' work without appropriate attribution. Since work proceeds collaboratively, sometimes students undervalue the contributions of the mentor. It is easy to undervalue the kind of sharpening and editing that often makes the difference between acceptance for publication and rejection.

This is not to suggest that students' ideas have never been used without consent, but many problems may arise from misunderstandings of the conventions of science that could be corrected by better mentoring and by students' taking responsibility for educating themselves about policies.

**Banks's obligation to treat her mentor and the institution with respect *vs.* her obligation to warn other students about conditions of employment and mentoring that she perceives as an infringement on students' rights to their data, their ideas, and their ability to establish independence.**

It is impossible to tell from the case as written whether Hayward has clear policies on ownership of products and ideas, and whether he made a reasonable effort to inform his students of his and the institution's policies. We also don't know how he credits students' ideas and how he plans to help students establish their independence. Good mentoring would require all of these.

Both the institution and Hayward have an interest in the clear communication of policies. But whether Hayward made his policies clear or not, Banks has both an obligation to and an interest in making sure she is informed about lab policies. It is impossible to tell which of the two parties is at fault for the misunderstanding, or to what degree the responsibility for this apparent confusion is shared.

This said, it cannot be concluded that just because a lab director has a policy and communicates it effectively, her or his students will (or should) adhere to that policy under all circumstances. Policies can be unjust, wrong, even illegal. Setting policies and communicating them are issues of concern to Hayward, the institution, and students. One problem Banks is facing is her conflicting obligations to Hayward and the institution *vs.* her duty to right (what she takes to be) an injustice and help other students avoid the problems she has encountered.

**2. Interested Parties**

**Banks** has

- a right to be informed of lab policies, such as on the disposition of lab notebooks.
- a right to have her own ideas and creative contributions respected.
- an interest in continuing/furthering her scientific career from a solid base.
- an interest in keeping a good working relationship with her mentor.
- an interest in protecting her integrity and her reputation.

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**Hayward** has

- a right to have access to notebooks and data produced at his lab, funded by grants he wrote.
- a right to control access to notebooks and data produced at his lab.
- an interest in developing the talent of students and in respecting their ideas.
- an interest in continuing research started at his lab.
- an interest in providing good projects for his new students.
- an interest in maintaining good relationships with his former students.

**Hayward's students and postdocs** have an interest in knowing his policies.

**Hayward's university** has

- an interest in his maintaining a productive lab.
- an interest in seeing that students are treated fairly.

**Banks's new college** has an interest in her ability to do her job well.

**Hayward's funding institution** has an interest in having data produced with their funds adequately safeguarded and reasonably accessible.

**Science as a whole** has

- an interest in fostering reasonably open access to data.
- an interest in maintaining and fostering cooperation in science and research independence.

**3. Consequences**

There are several possible consequences to Banks, most notably to her **relationship with Hayward**, to her **career**, and to her **self-esteem**.

If Banks copies the notebooks, she may be caught, have her relationship with Hayward damaged or ruined, and get a reputation as a troublemaker, plagiarist, or thief. If she ever publishes anything based on these experiments without Hayward's assent, Hayward is sure to find out (they work in the same field, after all), and he is likely to guess that she copied the notebooks. Of course, she may <u>not</u> be caught, in which case she will have a faster start on her career. But whether she is caught or not, her self-esteem and integrity may be damaged and (depending on how she justifies the action to herself) she may have this duplicitous act on her conscience.

If Banks does not copy the notebooks, she may get a slower start to her career, but she may be able to salvage a working relationship with Hayward. This is important to her because she will need Hayward's support (i.e., letters of recommendation, etc.) as her career advances. She may also still have a chance to get Hayward to take a position closer to her own — e.g., sharing the data, collaborating on one or both of the projects, etc. If she can do this, it will be a good investment in the future of her career.

There are also possible consequences to **Hayward**. Whatever Banks does, Hayward's reputation may suffer if his lab policies are so vague that they lead to ill will among his students and post docs, or possibly to lost data or other unfortunate consequences.

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**4. Banks's Obligations**

**To conduct herself with integrity**. Honesty is an essential value for the conduct of science, and science is furthered through supportive and collegial relationships.

**To treat Hayward and his decision with respect**, even if it is wrong. When Banks was accepted into the program, she surrendered some of her autonomy in order to gain the education and assistance she needed to complete her degree. Although it is true that Hayward should have made her aware of the conditions under which she was working, she did consent to work for him, benefited from the education, from his recommendations and, probably with his help, secured a job. While she has a right not to be taken advantage of, she also has a responsibility to follow acceptable procedures to raise any issues.

**To establish her independence as a researcher.** Banks has an obligation to herself and to her new employer to develop an independent program of research that will allow her to meet the conditions for advancement. Her ability to accomplish this will depend on collegiality with Hayward and/or with other researchers. By engaging in critical self-assessment and peer review, including a frank assessment of her competence from her mentor, she will better be able to set goals for her future.

**To inform herself on data sharing policies and lab policies**. Before Banks discusses anything with Hayward, she ought to inform herself about the policies of funding agencies. She might discuss a full range of issues with other researchers at her institution, or familiarize herself with references on the subject. Banks is about to move from the role of student to professor. She needs to be able to view the situation from the perspective of the professor and grants manager, both for her own benefit and to prepare herself to discuss the issues with Hayward.

**To seek clarification of Hayward's policies**. Banks seems to assume that Hayward's prohibition of her taking the lab notebooks would also extend to having copies of the notebook pages. Banks needs to think through an approach to Hayward that is collegial and avoids a counterproductive confrontation that further alienates him. She needs to know how inquiries about her dissertation data should be handled. Unless he wants all inquires to be addressed to him, she would need copies of the lab notebooks.

**To foster scientific collegiality and cooperation**. All scientists have this responsibility.

**To empower students to pursue the issues of lab policies if her efforts are unsuccessful**. As someone who has advanced from student to graduate, Banks has a responsibility to mentor her younger colleagues, and a responsibility to think about how she best helps them — by undermining their trust in the institution and their mentor, or by empowering them to take responsibility for their learning.

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# The Jessica Banks Case
## Evaluation Checklist

| | Student's name: | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Side 1 position (yes or no) | | | | | | | | | | |
| Side 2 position (yes or no) | | | | | | | | | | |
| **Issues and Points of Conflict (5 points; 4=5; 3=4; 2=3; 1=1)** | | | | | | | | | | |
| Banks's vs. Hayward's right to notebooks | | | | | | | | | | |
| Banks's right to pursue research she has already worked on vs. Hayward's right to control research initiated in his lab | | | | | | | | | | |
| Banks's interest in establishing independence vs. her interest in maintaining collegiality and personal integrity | | | | | | | | | | |
| Banks's obligation to respect mentor vs. her obligation to warn other students | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Interested Parties (3 points; 5-7=3; 3-4=2; 1-2=1)** | | | | | | | | | | |
| Banks | | | | | | | | | | |
| Hayward | | | | | | | | | | |
| Hayward's students & postdocs | | | | | | | | | | |
| Hayward's university | | | | | | | | | | |
| Banks's new college | | | | | | | | | | |
| Hayward's funding agency | | | | | | | | | | |
| scientific community | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Consequences (4 points)** | | | | | | | | | | |
| to Banks's relationship with Hayward | | | | | | | | | | |
| to her career | | | | | | | | | | |
| to her self-esteem | | | | | | | | | | |
| to Hayward's reputation | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Banks's Obligations (5 points; 6-7=5; 4-5=4; 3=3; 2=2; 1=1)** | | | | | | | | | | |
| to act with honesty and integrity | | | | | | | | | | |
| to respect her mentor | | | | | | | | | | |
| to establish independence | | | | | | | | | | |
| to learn lab policies | | | | | | | | | | |
| to seek clarification of policies | | | | | | | | | | |
| to foster collegiality | | | | | | | | | | |
| to empower other students | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Reassess (3 points)** | | | | | | | | | | |
| **Total (20 points possible):** | | | | | | | | | | |

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# The Charlie West Case

Charlie West completed his doctorate in biology two years ago and is in his last year as a post doctoral fellow in Professor Wilson's laboratory. The last few months have been both good and bad. West and his wife were thrilled by the birth of their first child six months ago, and research has been going well. There are just a few relatively straightforward controls to be run before he and Wilson can submit a manuscript they have been preparing. In addition, West had five job interviews and was then offered a position at Heartland State University, which he has accepted.

However, his success has also caused some problems. With all the preparation and traveling for interviews plus the new responsibilities of parenting, West hasn't had the time or energy to do very much work in the lab lately. There's another factor as well. West promised Wilson that he'd take care of those controls as soon as he finished interviewing but he hasn't done them yet because he's been writing a grant. During West's second visit to Heartland, the biology department chair made it clear that West is expected to bring in external funding for the research he plans to begin at HSU in a little over a year. The chair told West, "The sooner you get a grant, the better your chances for tenure."

For his post doc, West decided to switch fields in order to learn some new techniques, but for his job he plans to return to research very close to what he did for his Ph.D. In fact, his job seminar was all based on his grad research, not the work he has done as a post doc. West has an idea for a project that everyone he has consulted agrees has great potential. He is very excited about his planned research, and is highly confident that it will be successful both with the funding agency and in the lab. The only problem seems to be getting the grant written.

Unfortunately, since this is West's first grant application, writing it is proving to be far more time-consuming than he expected. He started a couple of months ago and has written the Research Design and Methods as well as the Preliminary Studies sections. All the special forms, facilities statements, biographies, supporting letters, and the budget are now done, but that still leaves the "Background and Significance" section of the text.

It seems that every time he gets set to work on the grant proposal, something goes wrong. Last week he discovered that he had forgotten the animal use forms and had to rush about getting his protocol finalized and approved. A few days ago his baby daughter was up all night with an earache. Then, just this morning, Wilson was pressing him for experimental results. "Look, Charlie," he said, "I know you've been busy, but those experiments can't wait any longer. It's been eight or ten weeks since you finished interviewing and the paper still isn't ready to submit. If we don't get moving we're going to get scooped by Joe Atkins' lab. Neither of us can afford to lose an important publication like this, especially you at this stage of your career. I want to see you at the bench tomorrow. Besides, I'm supporting you on my grant to do research in my lab, not to try to pull in money for HSU."

The NIH grant application deadline for which West has been aiming, one that could give him funding just after he arrives at HSU, is now only three days away, and it's already 10 pm. As he goes through his files, frantically pulling out relevant articles while feeling fairly sure

that there is no way he can get the writing done in time, he comes across a grant proposal on a similar topic that he had helped a professor review while he was a graduate student. The professor had also pointed out that it was a model proposal — scientifically sound and extremely well-written. As he looks at the photocopy he kept, West realizes that the Background section of this older grant would fill in 90% of the information he needs. He could easily write the other 10% in three days.

Reasoning that grant proposals are funded based on the original proposal and not the background, West decides to type in the background material from the old grant, add new results and references that have been published in the last two years, and be done with it. This way everyone should be happy.

**Should West use the material this way? Why or why not?**

**The Charlie West Case** Name: _____
**Side 1** Date: _____

**Should West use the material this way?** _____ yes _____ no
**Why or why not?**

**The Charlie West Case** Name: _____
**Side 2** Date: _____

**Should West use the material this way?** _____ yes _____ no
**Why or why not?**

| Criteria | |
|---|---|
| Issues | |
| Int'd Parties | |
| Consequences | |
| Obligations | |
| Reassess | |
| **TOTAL** | |

## Notes for Discussion and Assessment

## The Charlie West Case

### 1. Issues and Points of Conflict

**West's interest in getting the proposal done quickly *vs.* the original author's interest in controlling and getting credit for his/her own ideas.**

West has an interest in getting the proposal done quickly so he can meet the grant deadline and satisfy his new employer. West is considering plagiarism as a means to this end. He either doesn't care that he's using someone else's words and ideas without credit or doesn't think that copying the Background Section from someone else's proposal is a big deal. But plagiarism is an issue precisely because the conventions of science protect scientists' ideas and data as intellectual property. Besides being a matter of pride and career advantage for the authors of scientific research, giving proper credit for their ideas and data is important for maintaining the integrity of scientific information. Scientists evaluate scientific reports in part by checking cited sources and making a judgment about the reputation of the author and/or the program of research of which the report is a part. These strategies can't be used effectively if the origin of scientific information is hidden or misrepresented.

Still, there are several forms of plagiarism differing in degree of seriousness. For example: One might borrow and cite references from another author's paper without reading the original cited sources; one might use an idea or "well-turned phrase" from another author's work without crediting it; one might use several paragraphs of verbatim text from another author's published (or unpublished) text without using quotation marks or acknowledging original authorship; one might publish original data derived from another person's published paper without acknowledging its source; one might reproduce a drawing or table without getting copyright release.

Some forms of plagiarism are the result of carelessness: sloppy note taking; failure to accurately transcribe notes; failure to carefully proofread; and so on. Sometimes plagiarism is the result of ignorance of the conventions of science and/or of different cultural perspectives on the conventions of science. However, if one wishes to be a scientist, one is expected to learn and respect the conventions of science, in this case, to respect the intellectual property of another. Some forms of plagiarism are not easy to detect or to substantiate. Moreover, it is not always possible to determine whether the act resulted from carelessness, honest error, or intention. In West's case, it seems clear that he knew he was copying someone else's background material and representing it as his own. This appears to be a more serious breech of the conventions of science.

West may rationalize his actions by arguing (to himself) that proposals are funded on the basis of the research plan, rather than the Background Section. Psychologists [1] point out that the ability to rationalize one's actions is central to our psychological existence. Self-deception

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[1]Goleman, Daniel *Vital Lies, Simple Truths: The Psychology of Self-Deception*, Simon & Schuster, 1985.

serves as a important defense mechanism and is a means of psychic self-preservation. Self-deception and rationalizing is sometimes benign, but it can also be dangerous . It is important that individuals develop skill in examining rationalizations from the perspective of others who are affected by the action that was rationalized. For example, it is hard to imagine West defending this form of plagiarism were he to review a grant proposal and discovered its author had plagiarized the Background Section of a grant proposal he had painstakingly written. If West's action is not a serious breech of the conventions of science, he could simply add a note to the beginning of his Background Section saying, "Ninety percent of this was taken from a previous grant by a different author."

**West's obligations to his current employer *vs.* his future employer.**

West seems to be tempted to commit plagiarism primarily because of the pressure he feels to meet the expectations of his future employer, and the requirements of his present position. Wilson rightly expects West to fulfill his obligations as a postdoctoral fellow. Wilson has shown consideration for West's future — he did allow West time for those five job interviews, after all. And, as Wilson points out, it is clearly in West's best interest to complete the work he has begun at Wilson's lab and publish that article. In fact, completion of the current work is likely to have a greater long-term impact on his future tenure decision than a hastily developed grant application, which is unlikely to get funded on the first submission anyway. The department chair at HSU expects West to bring in grant money, which is not unusual (though it may be a bit much to implicitly tie his chances at tenure to bringing in a grant his first year on the faculty). HSU has an interest in seeing to it that all grant proposals submitted by its faculty members are truthful. A pertinent factor to consider is when West's obligations to HSU begin, and when his obligations to Wilson end.

**West's responsibilities to family *vs.* his responsibility to advance his career.**

West is feeling the tensions between his obligations to his wife and new baby and his desire for career advancement. He is experiencing, possibly for the first time, the emergence of family obligations which can't be postponed (as is the case with a sick child) and which often interfere with obligations to one's employer (to be rested enough to function effectively on the job); or, in this case, with his desire to devote discretionary time for career advancement.

The challenge for West and his wife will be to work out ways to meet their new obligations to their child, while considering obligations to employers and family priorities. Both parents need to succeed in their chosen work — even if the chosen work is staying home to care for the children. Sustaining the family unit depends on working out ways to attend to each member's needs. West has an obligation to succeed in his career, but he needs to ask himself (and his wife) if devoting all his discretionary time to career advancement is a family priority. Does he wish to succeed at the expense of the family? Decisions he makes, e.g., to plagiarize, directly affect his family, either through the consequences to his job security or through the psychological effects on his sense of personal and professional integrity.

West and his wife need to collaboratively decide on family goals, and prioritize them. If his career advancement is the primary family goal at the moment, he and his wife will work out ways to protect his rest. In two-career families, cooperation and problem solving are essential. Perhaps West also needs to explore the kinds of compensation that many universities offer for

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young families, e.g., extensions of the tenure clock, more generous family leave, and so on.

**2. Interested Parties**

**West** has an interest in

- advancing his career.
- maintaining a good relationship with his former teacher.
- improving his position at his new job.
- improving his family's financial and personal situations.
- protecting his own integrity and reputation.

**West's family** has an interest in

- advancement of West's career.
- the demands on West's time.
- West's reputation and well-being.
- and a right to expect that West would not compromise the family's welfare by committing unethical acts.

**Wilson** has an interest in

- seeing that West fulfills his work obligations in the lab.
- protecting the reputation of his subordinates and of the lab.
- and a right to expect that West would not compromise those reputations and put Wilson in a professionally troubling position.

**Other people in Wilson's lab** have a right to expect that Wilson

- will pull his own weight and fulfill his commitments in the lab
- would do nothing to hurt the collegiality and reputation of the lab
- will show due professional consideration to other lab workers by using equipment efficiently, for example, or by making sure that work requiring collaborative effort is not held up unnecessarily.

**The author of the original grant** has the right to have his or her work recognized and not stolen. An injustice would be committed against the author of the original grant if West's grant proposal were allowed to stand — even if there were no concrete consequences for the author.

**The professor who gave West the model proposal** has an interest in

- seeing that high-quality research grant proposals are approved for funding
- seeing a former student advance in his career
- seeing that her students learn and practice high standards of scientific practice
- protecting her own integrity and reputation
- seeing that scientific misconduct is reported and punished.
- and a right to expect that grant applicants will be honest and forthright, and that a colleague would not knowingly put her in a professionally compromising position.

**Heartland State University** has

- an interest in West's securing this grant.
- a right to expect that its faculty members will 1) submit honest and forthright grant proposals and 2) will not compromise the institution's integrity and reputation.

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**The funding agency (NIH)** has the right to expect that its reviewers will

- provide it with candid, objective reviews
- uphold the integrity and honesty of the grant process.
- respond appropriately when plagiarism is observed.
- and an interest in not seeing another case of misconduct on the books, and in seeing that the best proposals and the best scientists are funded.

**The scientific community** has an interest in

- seeing that its members are honest and forthright and that the granting process upholds these standards.
- seeing that the best proposals are funded.
- avoiding another case of misconduct on the books.

**3. Consequences**

West, himself, faces the most serious consequences of this decision; it may have an impact on his **career**, his **character**, his **conscience**, his **relationship with Wilson**, and his **family**.

If West copies the earlier grant, he may be caught, in which case, an inquiry will probably be initiated. Because it is a clear-cut case of plagiarism, West probably will be barred from receiving federal funding for several years. HSU might not fire him right away, but he will not enjoy much support there, and his chances of getting tenure will be compromised.

On the other hand, he may not be caught, but he may learn the unfortunate lesson that cutting corners and cheating pay. The lesson is unfortunate from a moral standpoint, of course. But it is also unfortunate from a practical standpoint because people do not usually get away with cheating habitually, especially in a field with as much oversight as science. If he gets away with it this time, he may think he can get away with it again — or that he can get away with even worse kinds of misconduct — and he is bound to be caught eventually.

Whether he is caught or not, cheating once may have a negative effect on West's character, beginning the process of making him into a dishonest person. Alternatively, West may agonize over this incident for years to come.

In addition, West may be mistaken in assuming that the Background section he intends to steal is complete. If he were to do his own research, he might find information not covered, or even mistakes in the original grant proposal. By relying on someone else's summary and interpretation of prior research, West runs the risk of making or perpetuating mistakes.

If West decides not to copy the earlier grant, he can put the grant proposal aside and get back to work on Wilson's project. Getting that publication will help his career and get him back on Wilson's good side. He will then have four months to complete the grant proposal honestly and properly; he will probably do a better job on it if he is not quite so rushed. Not getting the grant immediately probably will not damage his chance at tenure, but a misconduct charge almost certainly would.

West could decide to spend the next three days working on the grant full time. This will not please Wilson, but how much difference can a three-day delay make when the process has already been stalled for several weeks? He will risk alienating Wilson, which will not do him

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any good; West will need letters of recommendation and, ideally, a collegial relationship with Wilson for years to come.

There are also possible consequences to other parties including:

**West's family.** If West cheats and is caught, his family will be put through the stress and turmoil of his enduring an investigation. Likewise, they will likely face the trauma of his losing his job and having to start another career; once he has a reputation as a plagiarist, this may not be easy.

**Wilson.** Work in his lab may be delayed by the other demands on West's time.

**Other people in Wilson's lab.** West's failure to carry his own weight and to fulfill his commitments in the lab at best sets a bad example and at worst might be demoralizing. Furthermore, his tardiness might set back the rest of the lab in simply practical ways (by tying up equipment that other people could be using or preventing others from going forward with research that depends on West's finishing his work first, for example).

**HSU.** Once the university signs off on West's grant proposal, it is implicated in his plagiarism. If he is caught, the university may have to conduct an inquiry or an investigation, which would be costly in terms of money, reputation and relationships. Additionally, the university may have to replace West, which is a time-consuming and costly endeavor in its own right.

**To the funding agency.** If West cheats and is caught, the funding agency may have to conduct an inquiry or investigation, using up valuable resources, including money and staff time. Such an event also will fuel the flames of public discontent with science and scientists, possibly forcing the funding agency to spend even more effort convincing the public and Congress that science is worth the investment.

**To the author of the original grant proposal.** If West plagiarizes and isn't caught, an injustice still is perpetrated on the author of the original grant proposal because his/her property was essentially stolen. If West plagiarizes and **is** caught, the original author may be tied to the publicity surrounding the investigation. Having one's name associated with a scandal, even in the role of victim, almost always results in damage to one's reputation.

**To the professor who gave him the model proposal.** Depending on how West's role in the review of the model proposal was acknowledged, the professor who gave West access to the proposal he plagiarized also could be implicated. For example, if he/she failed to acknowledge to the funding agency that West participated in the review of the proposal (and that he made a copy of it for himself), he/she could be accused of failure to protect the confidentiality of the proposals entrusted to him/her.

**To the person who discovers the plagiarism.** Whoever discovers the plagiarism will be implicated in at least the early stages of the inquiry or investigation. Indeed, it may cause the discoverer significant moral anguish simply to decide whether to report the plagiarism. This person could suffer subsequent retaliation; whistle-blowers often are blamed for uncovering misconduct.

**To science in general.** Any instance of cheating potentially undermines scientists' faith in the process and the public's faith in science and scientists and, ultimately, on the funding of sci-

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ence. Scientific research is founded on honesty and trust because its goal is to systematically discover and explain truths about the world in which we live. What West is considering is dishonest and, thus, a breach of this trust.

**4. West's Obligations**

**To maintain physical and mental health.** West has an obligation to himself to give careful consideration to the commitments he makes. He must assess his capacity to meet the obligations he takes on and not overcommit himself, thereby compromising his ability to satisfy his personal desires as well as meet commitments to self, family, and others.

**To be honest and conduct himself with integrity.** This obligation is fundamental to upholding the goals and reputation of science. It is also fundamental to maintaining West's own self-respect and well-being, and important in promoting his family's welfare. West is obliged to assess his actions in light of the values of science and in light of his personal goal to be viewed as a person with integrity. Becoming a scientist involves integrating one's own values with the values of one's discipline.

**To fulfill his contractual responsibilities to Wilson** because he has promised to do so and because Wilson has shown consideration for his future.

**To behave responsibly toward his new employer.** West's responsibilities include bringing in grant money and preclude plagiarizing grant proposals.

**To balance obligations to self and family with obligations to employers.** West is obliged to support his family, both personally (by spending time with his wife and daughter) and financially. These are obligations West promised to fulfill when he got married and decided to father a child.

**To respect the intellectual property of his colleagues.** This is important for maintaining the integrity of scientific results, as well as preventing offense and, potentially, harm to the career and reputation of the original author.

**To know and uphold rudimentary rules of scholarship.** When West submits a grant proposal, he implicitly promises that he meets this minimum qualification for being a scientist.

**To maintain the reputation of science** because he pledges to do so when he joins the scientific community and because society would lose the benefits of science if people no longer thought they could depend on scientific results.

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# The Charlie West Case
## Evaluation Checklist

| | Student's name: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Side 1 position (yes or no) | | | | | | | | | | | |
| Side 2 position (yes or no) | | | | | | | | | | | |
| **Issues and Points of Conflict (5 points; 3=5; 2=4; 1=3)** | | | | | | | | | | | |
| West's interest in finishing quickly vs. original author's interest in protecting intellectual property | | | | | | | | | | | |
| West's obligations to current vs. future employers | | | | | | | | | | | |
| West's duties to family vs. to career | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Interested Parties (3 points; 5-9=3; 3-4=2; 1-2=1)** | | | | | | | | | | | |
| West | | | | | | | | | | | |
| West's family | | | | | | | | | | | |
| Wilson | | | | | | | | | | | |
| others in Wilson's lab | | | | | | | | | | | |
| author of original grant proposal | | | | | | | | | | | |
| professor who shared the model grant proposal | | | | | | | | | | | |
| Heartland State University | | | | | | | | | | | |
| funding agency | | | | | | | | | | | |
| science in general | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Consequences (4 points; 12-14=4; 9-11=3; 5-8=2; 1-4=1)** | | | | | | | | | | | |
| to West's career | | | | | | | | | | | |
| to West's character | | | | | | | | | | | |
| to West's conscience | | | | | | | | | | | |
| to West's relationship with Wilson | | | | | | | | | | | |
| to West's family | | | | | | | | | | | |
| to Wilson | | | | | | | | | | | |
| to other people in Wilson's lab | | | | | | | | | | | |
| to Heartland State University | | | | | | | | | | | |
| to the funding agency | | | | | | | | | | | |
| to the author of the original grant proposal | | | | | | | | | | | |
| to the professor who shared the model proposal | | | | | | | | | | | |
| to the person who discovers the plagiarism | | | | | | | | | | | |
| to science in general | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **West's Obligations (5 points; 8-9=5; 5-7=4; 3-4=3; 2=2; 1=1)** | | | | | | | | | | | |
| to maintain physical and mental health | | | | | | | | | | | |
| to be honest and act with integrity | | | | | | | | | | | |
| to fulfill his contractual obligations to Wilson | | | | | | | | | | | |
| to behave responsibly toward new employer | | | | | | | | | | | |
| to balance obligations to self/family and employers | | | | | | | | | | | |
| to respect the intellectual property of colleagues | | | | | | | | | | | |
| to know and uphold rudimentary rules of scholarship | | | | | | | | | | | |
| to maintain the reputation of science | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Reassess (3 points)** | | | | | | | | | | | |
| **Total (20 points possible):** | | | | | | | | | | | |

# The Diane Archer Case

Professor Diane Archer is a tenured member of a biology department at a major Midwestern university. She has been in the department for 15 years, and during that time she has supervised the work of 20 Ph.D. students. As part of the mentoring process, she has worked closely with her students, teaching them the ropes of writing grant proposals and on occasion inviting students to assist her in reviewing NIH grant applications.

Professor Archer is currently in her last year on an NIH study section. As she is reviewing a group of proposals, she comes upon one written by Charlie West, a former graduate student of one of her close departmental colleagues. Archer knows and remembers Charlie West because she had solicited his help two years earlier in reviewing a proposal closely related to West's own area of research. As she now reads West's proposal, Archer is impressed with the scientific soundness and fine writing style in the Background section. She notes, however, the extremely terse and awkward phrasing in the Research Design and Methods.

Perplexed by this shift in style, Archer retrieves from her files the grant proposal West had reviewed with her two years earlier. She is dismayed to see that West has used verbatim virtually the entire Background section of the earlier proposal for his own current proposal.

Archer is torn. If she reports her discovery of West's plagiarism to the NIH, she knows she will have thrown this young scientist's otherwise promising scientific career into jeopardy. If, however, she says nothing, she will be shirking her responsibility to the NIH, as well as risking her own professional reputation, should the plagiarism be detected later.

She decides to contact West directly, and confront him with her finding. She plans to advise West that what he has done constitutes plagiarism and suggest to him that he withdraw the proposal. If West agrees, and withdraws the grant application, Archer feels she need take this incident no further.

**Should Archer proceed with her plan to contact West? Why or why not?**

**The Diane Archer Case** Name: _____
**Side 1** Date: _____

**Should Archer proceed with her plan to contact West?** _____ yes _____ no
**Why or why not?**

**The Diane Archer Case** Name: _____
**Side 2** Date: _____

**Should Archer proceed with her plan to contact West?** _____ yes _____ no
**Why or why not?**

| Criteria | |
|---|---|
| Issues | |
| Int'd Parties | |
| Consequences | |
| Obligations | |
| Reassess | |
| **TOTAL** | |

**Notes for Discussion and Assessment**

**The Diane Archer Case**

**1. Issues and Points of Conflict**

**Archer's obligation to maintain the confidentiality of grant proposals *vs.* her obligation to educate young scientists.**

Diane Archer's current problem arises, in part, from the way she managed her two roles: that of educator of young scientists and that of external reviewer.

In her role as educator, she thought it was important to provide West with some insight into the role of reviewer. Thus, she involved him in the review of grant proposals that she had access to by virtue of her role as an external reviewer. She justified this on the grounds that it provided a valuable learning experience for West; it also helped her write reviews that were more thorough and thoughtful than they would have been if she had not sought the input of a student whose expertise exceeded her own.

In her role as external reviewer, she had an obligation to guard the confidentiality of the grant proposals she processed. Whether she has met this obligation depends, in part, on how she handled the review. When she asked West to review certain aspects of the proposal to augment or strengthen her review, she had a responsibility to acknowledge his contribution either directly to the granting agency or in the review itself. That way, either the author or the granting agency would have a record of who saw the information. If she failed to acknowledge West or failed to ask that copies be returned (or at least warn him of the confidential nature of the information), she has a problem that she needs to address with the funding agency. She also might have done a disservice to West. She might have inadvertently sent him the message that using someone else's work without credit is acceptable — an assumption that has now gotten him into trouble.

**Archer's duty to teach students the rules and conventions of science *vs.* duties of students to learn these rules and conventions.**

Part of Archer's dilemma hinges on the question of the limits of responsibility of teachers to students. It has become increasingly clear that students do not necessarily know the rudimentary rules and conventions for conducting scientific research. To correct deficiencies resulting from a failure to know the rules, funding agencies such as NIH and NSF are now requiring that trainers provide specific instruction in these rules and conventions. No one would hold the trainer responsible for students' intentional acts of misconduct. What is less clear is the extent to which educators like Archer have a duty to ensure that students know the rules, conventions and sanctions that follow from breeches of the rules of science.

In this case, Archer may feel responsible for not adequately stressing the rules with West, or may feel she gave trainees inappropriate access to the proposals. She also might think that her institution as a whole does not adequately educate trainees. One might argue that the educator, indeed, has a responsibility to encourage good work habits that prevent errors resulting from sloppy work. This can be done by discussing scientific rules and conventions with students, modeling good science, and correcting students who fail to live up to scientific

standards through constructive criticism and, when serious enough, sanctions. Irrespective of any possible contributory negligence on Archer's part, however, most educators would wonder whether they have a duty to spell out a rule as basic to academic writing as refraining from plagiarizing other people's work.

One can imagine less serious forms of plagiarism that result from carelessness in note taking or from failure to accurately type or proofread a document. It is hard to imagine that the form of plagiarism described in this situation resulted from "honest error." West had to know that he was copying someone else's background material, as he would have had to locate the paper in order to accurately reproduce it. He obviously used someone else's work to develop his own proposal. Some might argue that West simply did not know that it was wrong to plagiarize the Background Section of a grant proposal, or that he reasoned that grants are not funded based on the Background Section, but on the original contribution of the proposed topic. If it is true that West does not know that copying someone else's background statement constitutes scientific misconduct (it is not a simple error that results from an honest effort to develop a good grant proposal), then it is also clear that West does not know the rudimentary rules of scholarship. The funding agency has a right to expect that every scientist who submits proposals knows such rudimentary rules, and scientists who fail to attend to the rules for submission (submitting "original work" is one) risk consequences. It is West's responsibility to "know the rules and conventions" of science.

Another question of scope is whether Archer's responsibility to educate students extends beyond the time when those students are actually at her institution. If so, her duty to educate West is still binding and might call for her to correct him by reporting his actions as misconduct. If Archer warns West without letting others know, however, she is effectively taking responsibility for monitoring his future acts. Besides possibly being beyond the limits of Archer's responsibility, this strategy might be impractical because West and Archer are at different institutions.

**Archer's obligation to obey funding agency's rules for handling misconduct *vs.* her obligation to show special consideration for a former student.**

When Archer agreed to be a reviewer, she agreed to abide by the rules for reviewers. She discovers the plagiarism in West's application and is considering her role in addressing this issue. Should she warn West, out of consideration for their teacher-student relationship, and give him an opportunity to withdraw the proposal? Arguably, West didn't know that what he was doing was wrong and would never do such a thing again if the problem were explained to him. However, such a course of action also would hide any role Archer may have in the matter, including her failure to maintain the confidentiality of the original grant proposal and possible conflict of interest[1] for reviewing a grant proposal submitted by a former student.

But does Archer have a right to cover up West's mistake (or misconduct)? The proposed course of action could enable a potentially unscrupulous person to be deceptive again, perhaps growing more clever at it. A cover-up also shows disrespect for the intellectual property of the author of the original grant proposal and undermines the funding agency's intention to

[1]If Archer and West had co-authored any research within the previous five years, she should not have agreed to review his grant proposal.

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ensure that the best research is funded.

Many granting agencies, including NIH, have policies about how reviewers are to respond to suspected misconduct in grant proposals, and many granting agencies have procedures and policies designed to deal with misconduct. It is not at all clear that it would be best for Archer to take matters into her own hands, rather than letting the granting agency follow its procedures. Is it fair to assume that the granting agency would not support her suggestion that West be contacted and asked to withdraw without more serious consequences? If she thinks this form of plagiarism is not that serious, she can advocate for West with the funding agency. A plagiarized proposal faces disciplinary action because the proposer tried to deceive the agency into believing that he or she had the necessary insight and skill to execute the study. But the funding agency has procedures for dealing with less serious deviations from the rules for submission. A poorly developed proposal is rejected with a score that indicates the quality of the submission.

Bypassing the funding agency's procedures usurps control that properly belongs to the agency (authority that Archer accepted when she signed on as a reviewer). This action also could undermine Archer's perceived duty to show special consideration to a former student. She could unwittingly damage West more in the long run by failing to take advantage of this opportunity to teach him a lesson about scientific standards.

**2. Interested Parties**

**Archer** has

- an interest in seeing that high-quality research grant proposals are approved for funding.
- an interest in seeing a former student advance in his career.
- an interest in seeing that her students learn and practice high standards of scientific practice.
- an interest in protecting her own integrity and reputation.
- an interest in seeing that scientific misconduct is reported and dealt with.
- a right to expect that grant applicants will be honest and forthright.
- a right to expect that a colleague would not knowingly put her in a professionally compromising position.

**West** has

- an interest in advancing his career.
- an interest in maintaining a good relationship with his former teacher.
- an interest in protecting his own integrity and reputation.
- a right to expect that a former teacher will look out for his interests and show him personal consideration.

**The author of the original grant** has a right to have her or his work recognized and not stolen. An injustice would be committed against the author of the original grant if West's grant proposal were allowed to stand — even if there were no concrete consequences for the author.

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**The funding agency (NIH)** has

- the right to expect reviewers to submit candid, objective reviews.
- the right to expect reviewers to uphold the integrity and honesty of the grant process.
- the right to expect reviewers to respond appropriately when plagiarism is observed.
- the right to expect that grant proposals are original work that cite quoted sources appropriately and are not the product of plagiarism.
- an interest in not seeing another case of misconduct on the books.
- an interest in seeing that the best proposals and the best scientists are funded.

**The scientific community** has

- an interest in having honest and forthright members and a granting process that upholds these standards.
- an interest in seeing that the best proposals are funded.
- an interest in not seeing another case of misconduct on the books.

**3. Consequences**

There are a number of possible consequences to Archer, most notably to her **relationship with West**, to her **conscience**, and to her **reputation and/or career**.

If Archer calls West, he could retract the grant proposal, ending the trouble for Archer; or he could deny any wrongdoing, in which case, Archer will be obliged to report the incident to the funding agency. As a result of making the call, Archer might incur West's animosity and strain their relationship, or she might actually earn West's initial gratitude. She might also suffer a troubled conscience if she is not completely confident that calling West is the best first step.

If Archer reports the incident (with or without talking to West), the investigation may not have much effect on her. This seems unlikely; she might be dragged in somehow. Whistleblowers often suffer for their actions. It is also possible that Archer might incur West's animosity and strain their relationship. Even if a phone call first earns Archer West's initial gratitude, trust is not easily repaired when broken. If Archer does not call West first, she might suffer a troubled conscience — she might bear the heavy burden of thinking she ruined a young colleague's career without need.

If Archer does nothing, someone else — such as another reviewer or even the original author — might discover the plagiarism and how West got access to the plagiarized material. Then Archer may be implicated and her reputation sullied. And again, she might suffer a troubled conscience.

There also are possible consequences to other parties, including:

**West**

If Archer reports the incident

- West's reputation and career might be ruined.
- West might be barred from applying to NIH for grants for some period of time (three years is the average period of debarment for this type of misconduct), have a rocky start to his career, and then recover completely; NIH might even impose a much less serious sanction.

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- West might be found innocent of Archer's accusation. Even so, West's reputation will be sullied because he was the subject of an scientific misconduct investigation.

**If Archer warns West**, and he does retract the grant, he will be put behind — but not by three years — and his reputation presumably will not be seriously compromised.

**If West had not himself read or reviewed the papers referred to**, there is a real danger that he could have missed something that was not important for the research proposed in the original grant application but is important for, and possibly detrimental to, the experiments West has planned.

**The author of original grant proposal**

- whose reputation might be sullied if Archer blows the whistle on West; having one's name associated with a scandal in any way, even as a victim, can be harmful to one's reputation.
- who will be deprived of due credit for his/her ideas if West's grant proposal is allowed to stand.

**The funding agency (NIH)**

- **If Archer reports the plagiarism**, the funding agency will have to initiate some kind of investigation. This can be costly and time-consuming.
- **If Archer calls West** and convinces him to retract the grant proposal, the funding agency will be spared the time and expense of an investigation. However, the funding process is undermined in a real, if slight, way when a blind eye is turned to cases of plagiarism.

**The scientific community** may be harmed whether or not Archer reports West. Failing to report could undermine the reputation and integrity of science; reporting might cause a scandal which that likewise harm the reputation of science.

**4. Archer's Obligations**

**To report plagiarism** and, generally, to uphold high standards of conduct.

**To admit error and try to repair and prevent future damage** insofar as she may have contributed to misconduct in this case.

**To submit candid, objective reviews** and try to ensure that the best researchers are funded.

**To protect grant proposal confidentiality.**

**To educate young scientists through the review process.**

**To ensure that graduates of her institution are aware of the rules and conventions of science** and the consequences of breaking those rules.

As a former teacher and now a colleague of West's, Archer has an obligation, out of loyalty and friendship, **to consider the effect of her actions on West.** Indeed, Archer might be obliged to consider the effect on West whether she knew him or not. But we generally think that an obligation like this is stronger when a previous relationship exists simply because access to information about someone's motives or record can help one assess that person's actions.

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# The Diane Archer Case

## Evaluation Checklist

| | Student's name: | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Side 1 position (yes or no) | | | | | | | | | | |
| Side 2 position (yes or no) | | | | | | | | | | |
| **Issues and Points of Conflict (5 points; 3=5; 2=4; 1=3)** | | | | | | | | | | |
| Archer's obligation to maintain confidentiality vs. to educate young scientists | | | | | | | | | | |
| Archer's duty to teach rules vs. student's duty to learn | | | | | | | | | | |
| Archer's duty to obey funding agency policies vs. to show consideration to her former student | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Interested Parties (3 points; 4-5=3; 2-3=2; 1=1)** | | | | | | | | | | |
| Archer | | | | | | | | | | |
| West | | | | | | | | | | |
| author of original grant proposal | | | | | | | | | | |
| the funding agency | | | | | | | | | | |
| the scientific community | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Consequences (4 points; 6-7=4;4-5=3; 2-3=2; 1=1)** | | | | | | | | | | |
| to Archer's relationship with West | | | | | | | | | | |
| to Archer's conscience | | | | | | | | | | |
| to Archer's reputation and/or career | | | | | | | | | | |
| to West | | | | | | | | | | |
| to the author of the original grant proposal | | | | | | | | | | |
| to the funding agency | | | | | | | | | | |
| to science in general | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Archer's Obligations (5 points; 6-7=5; 4-5=4; 3-=3; 2=2; 1=1)** | | | | | | | | | | |
| to report plagiarism | | | | | | | | | | |
| to admit her own errors | | | | | | | | | | |
| to submit candid, objective reviews | | | | | | | | | | |
| to protect grant confidentiality | | | | | | | | | | |
| to educate young scientists through grant process | | | | | | | | | | |
| to ensure that graduates understand rules of science | | | | | | | | | | |
| to consider the effects of her actions on West | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | |
| **Reassess (3 points)** | | | | | | | | | | |
| **Total (20 points possible):** | | | | | | | | | | |



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# The Marty Brown Case

Marty Brown, a plant biologist at a major research university, is investigating the potential utility of transgenic tobacco plants as "factories" for the production of foreign proteins. The potential benefit of this research to human medicine is clear. For instance, the non-plant gene that Brown is working with right now is human Factor VIII, a protein essential for blood clotting and the protein that most people with hemophilia lack.

In his current experiment, Brown has introduced a construct of the Factor VIII gene into tobacco and has 100 transgenic plants that he is studying in a developmental time course. He is following both Factor VIII production and the plants' growth to assess the effect of the foreign gene on the plant's development, and vice versa.

Brown is excited about the success of his experiment thus far, and he feels that the potential uses for his findings make it imperative that he publish as soon as possible. A disease-free, inexpensive source of Human Factor VIII would be of great benefit to hemophiliacs, who run the risk of contracting disease from plasma-derived sources and who must find a way to pay about $100,000 per year for their treatment. The urgency is all the more real to Brown, whose infant son is a hemophiliac. The sooner Brown's promising results are published, the sooner other scientists will be able to follow his line of work, and the sooner his discovery can have a practical, clinical impact.

One Friday, late in January, Brown checks on the 100 transgenic tobacco plants that have now been in the greenhouse for about a month. He discovers that twelve of them are beginning to look sickly. Their leaves are drooping a bit and turning yellow on the edges. He records this in his notebook, and also notes that all of these plants are close to the door. Later, in the lab, when he checks his previous results, he finds that these twelve plants have been producing Factor VIII at a consistently higher level than the other plants. Only one other plant had Factor VIII in this range, although quite a few came close.

Feeling pressed for time, Brown decides not to investigate the cause of the poorer growth of the twelve plants any further. He concludes that because they happen to be near the greenhouse door, they have been repeatedly exposed to lower temperatures than the other plants, and that this is the problem. He records this conclusion in his notebook along with the other entries.

Early the following week, Brown is working on integrating his most recent transgenic plant data into the first draft of the manuscript on which he is working. He has entitled it "Human Factor VIII Production in Transgenic Tobacco Has No Deleterious Effect on Plant Growth." When Brown comes to the data on the twelve sickly plants, he considers whether he should exclude these plants from his analysis. He thinks that doing so would be justified because of the plants' proximity to the greenhouse door. In addition, the paper would be more impressive without the uncertainty associated with the data from these plants. He weighs the relevance of the data from those twelve plants against the principle that there is nothing wrong with excluding outliers and irrelevant data. Besides, he thinks these results are too important to risk letting them get held up in the review process.

**Should Brown leave out the data from those twelve plants? Why or why not?**

**The Marty Brown Case** Name: _____
**Side 1** Date: _____

**Should Brown leave out the data from those twelve plants?** _____ yes _____ no
**Why or why not?**

**The Marty Brown Case** Name: _____
**Side 2** Date: _____

**Should Brown leave out the data from those twelve plants?** _____ yes _____ no
**Why or why not?**

| Criteria | |
|---|---|
| Issues | |
| Int'd Parties | |
| Consequences | |
| Obligations | |
| Reassess | |
| **TOTAL** | |

## Notes for Discussion and Assessment

### The Marty Brown Case

As of December 1995 (when this case was being prepared), Human Factor VIII from recombinant sources was available in the final stages of FDA testing. However, it was expensive, and it may not have had quite the same properties as the plasma-derived protein.

Most hemophiliacs today use clotting factor preparations derived from plasma. These preparations are carefully screened and then purified to reduce the risk of infection. However, nothing is 100% safe, and all these extra steps cost money. There are approved preparations of clotting factor with different degrees of purity; the more pure, the more costly. Thus, one's risk of disease is related to one's ability to pay. In the early 1980s, the cost to treat a hemophiliac was about $10,000 per year. Today, that cost is close to $100,000. The cost of one unit of clotting factor has gone from $0.08 to between $0.50 and $1.00. (Thanks to the Louisville Red Cross Blood Center for this information.)

**1. Issues and Points of Conflict**

**Brown's obligation to do all he can to help and protect his son *vs.* his obligation to use sound, objective scientific judgment.**

The core issue in this case is whether or not the twelve sickly plants can reasonably be excluded from the data presented in Brown's manuscript.

Scientists rarely publish all of their data. No one would want to wade through all the tests, trials, errors, and optimizations. Typically, published data are excerpted, and there are few clear rules on how to do this. One rule is not to deceive or mislead the reader. Thus, the judgment of the scientist is very important. The scientist must interpret what the data are saying and then select the data that are relevant for presentation to other scientists, including the reviewers of the paper.

Note also that almost all experiments produce some anomalous data. The challenge for the scientist is to determine when those data can reasonably be attributed to an extraneous factor irrelevant to the experiment, and therefore excluded from the analysis, as opposed to when they are indicative of an incomplete understanding of the experimental system. It is also a challenge to describe the methods that produced the results with enough precision to guide replication of the experiment.

Thus, this conflict hinges on scientific judgment. Considering that Brown's infant son is a hemophiliac, it is clear the Brown is not a disinterested scientist. His desire to do good for his son and for hemophiliacs in general is laudable, but there is a real chance that his personal situation has clouded his professional, scientific judgment and produced for him a sense of urgency that may not be logical. Brown wants to conclude that the production of Factor VIII has no effect on the growth of tobacco plants. Yet his observations suggest that there is a good possibility that production of very high levels is deleterious. This may well be a situation in which Brown has an obligation to seek out the opinion of another scientist so as to check his own judgment. Note that if Brown excludes these data, the reviewers of the manuscript cannot perform this type of check.

**Brown's interest in being the one who receives the prestige and recognition associated with being the discoverer of a relatively inexpensive way to produce disease-free Factor VIII *vs.* his interest in maintaining his reputation as a careful, thorough scientific investigator.**

Scientists must judge when their data are ready for publication. Publishing too soon can sometimes result in misleading reports, but waiting too long may mean losing priority of discovery. There is prestige in being the first to report a discovery, and the accumulation of this prestige is required for continued success in science as a principal investigator.

In this case, it is not clear if Brown has competitors, but most researchers do. In addition, there is always pressure to maintain a certain level of productivity, usually measured in number of publications per unit of time. Thus, even without considering hemophilia and his son, Brown faces a conflict between timely and rapid publication. He must determine whether or not his results are sufficiently complete so as to merit publication. This determination may involve discussions with other, trusted colleagues.

**The interest of hemophiliacs and their families in the quick development of a safe, and relatively inexpensive source of Factor VIII *vs.* their interest in having limited resources used as efficiently as possible, and avoiding having false hopes raised by premature publications.**

In short, Brown is caught in a conflict between doing good vs. possibly doing harm. It appears in this case that Brown's desire to publish quickly is based on the best possible motivation: He wants to help people, including his own son. However, whether Brown's motives are altruistic or corrupt, the likely results of his actions are critical. If he excludes the data from the twelve sickly plants without knowing for certain whether the Human Factor VII gene is responsible for their decline, other scientists may pursue a line of research that ultimately proves fruitless, wasting time and resources because his initial report was inaccurate. This may draw attention away from other lines of research that would have been more useful, actually delaying, rather than expediting, the development of inexpensive, safe transgenic Human Factor VIII.

**2. Interested Parties**

**Brown** has an interest in

- seeing that a safe and relatively inexpensive source of Factor VIII is found as soon as possible.
- being the one who receives the prestige and recognition associated with being the discoverer of a relatively inexpensive way to produce disease-free Factor VIII.
- receiving royalties should his work lead to a patent.
- maintaining his reputation as a careful, thorough scientific investigator.

**Brown's students and associates** have an interest in

- being associated with a breakthrough in hemophilia treatment.
- maintaining their good reputations in the scientific community.
- avoiding the disruption and bad publicity that may result if Brown's initial claims are found to be overstated.

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**Other workers in this field, including pharmaceutical companies**, have

- a right to expect that all reports published by others, like Brown, are as thorough and accurate as possible.
- an interest in building on the work of others as quickly as possible.

**Brown's department and university** have

- an interest in sharing in royalties and prestige if Brown's work leads to a new, commercially important method for producing Factor VIII.
- an interest in avoiding the disruption and bad publicity that may result if Brown's initial claims are found to be overstated.
- a right to expect that all their researchers are being careful and thorough in their work and are exercising sound, scientific judgment.

**Hemophiliacs and their families,** including Brown's family, have

- an interest in the development of a safe and relatively inexpensive source of Factor VIII as quickly as possible.
- a right to expect that scientists are being careful and thorough in their work and are exercising sound, scientific judgment.
- a right to expect that limited research resources will be used as efficiently as possible, not wasted on dead ends.
- the right to expect that promising findings will not be publicized prematurely, so as to avoid raising false hopes.

**3. Consequences**

There are several possible consequences to Brown, notably to his **research**, to his **reputation and career**, and to his **claim for priority**.

If Brown excludes the data for the twelve plants and publishes without further investigating the cause of the plants' malaise, he could be advancing progress in the search for a new source of Factor VIII. If he is right, and there is some inconsequential, trivial reason for the appearance of the twelve plants, then his quick publication of an intriguing paper with clean data could trigger follow-up investigations many months sooner than would be possible if he decided to wait for more information. This could, in turn, accelerate the pace toward development of a commercially available product. He could also improve his chances of receiving a patent, particularly if he has any competitors investigating the same sort of approaches.

On the other hand, he risks a sullied reputation or a damaged career if his surmise turns out to be incorrect, and his exclusion of the data from the twelve plants is discovered later. He could even find himself defending himself against allegations of misconduct. Even if is it impossible to prove intended misconduct, the very presence of an investigation would cost him a great deal of time and money, cause him a great deal of stress, and likely seriously harm his career.

If Brown includes the data from the twelve plants and his surmise that they are sickly because of the additional cold, he risks delayed or deferred publication if reviewers do not think his surmise is adequate. This could also affect his claim to the prestige of first discovery if he has a competitor close on his heels. The competitor may even be one of the reviewers. Although manuscripts in review are supposed to be confidential, the competitor may gain some impor-

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tant experimental insight that could enable him/her to publish before Brown, or the competitor may simply be spurred into more rapid submission.

(Note that for the purpose of obtaining a patent, what counts in the U.S. is proving that you were the first to discover. Thus, dated lab notebooks are very important. It is conceivable that if the notebooks were a mess, a date on a rejected manuscript that presents the discovery to be patented may help one's case. In other countries what counts is the date of submitting a patent application, and in both the U.S. and Europe, one can do this before submitting a manuscript for publication. Any patent-related claims that are based on publication date are based on the date that the information becomes public, that is, when the article actually appears in the journal.)

If Brown does additional testing to confirm his hypothesis, the work will be on a more sound footing and publication will likely be delayed only by a few months. Brown needs to remember that even if he is correct, many years of development and testing will be required before human beings will directly benefit from his research. Many philosophers have argued that when there is a potential conflict it is more important to avoid doing harm than to do good.[1] At the same time, if his publication is delayed, he may risk loss of precedence if someone else working in the same field has had better luck.

There are also possible consequences to others, including:

**Brown's students, colleagues, department, and university** who could be affected in several ways.

- If Brown is correct in his interpretation of the plants' aberrant growth, then his students would benefit from their association with this work and be in a position to be the first to extend it. The department and university will share in Brown's prestige. In addition, the students, department and university may all also be able to share in any patent royalties.
- If, however, Brown's exclusion of data is inappropriate, his students could waste time pursuing a line of research made to look more promising than it really is. They and all others associated with Brown at the university could also waste significant time and resources in an investigation if Brown's exclusion is eventually discovered. Their reputations could be damaged as well as his.

**Other workers in this field, including pharmaceutical companies**, could be led down a blind alley by Brown's exclusion of the data and thus waste time, money, and other resources. However, more rapid publication could spur the pace of this work and bring a commercial product to market more quickly, perhaps resulting in greater profits.

**The journal that publishes Brown's work** would be affected positively, to some small extent, if the paper were referenced and discussed a lot. However, the journal would be adversely affected if it were perceived to be publishing questionable work.

[1]The obligation not to do harm is based on the ethical principle of non-maleficence; the obligation to do good is based on the ethical principle of beneficence. See Tom L. Beauchamp and James F. Childress, *Principles of Biomedical Ethics*, 3rd ed. (New York: Oxford University Press, 1989), pp. 120-255. See also William K. Frankena, *Ethics*, 2nd edition (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1973), pp. 45-48.

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**Hemophiliacs and their families** might suffer if time and resources were wasted pursuing a non-productive line of research, or if hopes were raised inappropriately. However, the more rapidly a safer, less expensive source of Factor VIII is developed the greater the savings in suffering, lives and money.

**Science as a whole** could be further damaged in some people's eyes if a public investigation were held.

**4. Brown's Obligations**

**To carry out careful, thorough research**. A scientist has an obligation to carry out carefully designed experiments in which relevant variables are identified, and either measured or controlled. He/she needs to be ready to investigate uncertainties that arise. A scientist has an obligation to be technically competent and keep complete notes.

**To use sound, objective scientific judgment,** both in conducting experiments and in interpreting their results. A scientist must judge when an uncertainty is important, and when an observation warrants additional investigation. Resources are not infinite, and judgments must be made as to when a line of research is sufficiently complete. Frequently, making this judgment will mean discussing one's results with another scientist.

**To publish honest reports of his work.** Brown, like all scientists, has an obligation to report all relevant data in his publications, and to limit himself to conclusions that are supported by the data.

**To publish results in a timely fashion,** which means neither rushing into print nor dragging his feet. Publishing too soon can clearly mislead other scientists, whether the intent is to mislead or not. Working on a project until a perfect data set is attained, however, may mean working on it too long, and not publishing information that would enable other scientists to engage in work in the area.

**To do all he can to help and protect his son**. That is, Brown has the obligation of a parent to care for and protect his child. This obligation may seem stronger than normal because Brown's son is not entirely healthy; he has hemophilia.

**To use his expertise to help other people**, including hemophiliacs (like his son), other scientists who can build on his research, and pharmaceutical companies that stand to profit from exploiting his findings.

**To protect his career** and his family's financial security by doing the best work he can. Brown's research has the potential to benefit his son eventually, but damaging his career will have an immediate, negative impact on his son and family.

**To maintain his integrity** by exercising his best professional judgment and doing what he is convinced is right after considering all the relevant factors.

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# The Marty Brown Case
## Evaluation Checklist

| | Student's name: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Side 1 position (yes or no) | | | | | | | | | | | |
| Side 2 position (yes or no) | | | | | | | | | | | |
| **Issues and Points of Conflict (5 points; 3=5; 2=4; 1=3)** | | | | | | | | | | | |
| Brown's duty to help son vs. to exercise good judgment | | | | | | | | | | | |
| Brown's interest in priority vs. maintaining reputation | | | | | | | | | | | |
| broad interest in quick results vs. broad interest in effective use of limited resources | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Interested Parties (3 points; 4-5=3; 2-3=2; 1=1)** | | | | | | | | | | | |
| Brown | | | | | | | | | | | |
| Brown's students and associates | | | | | | | | | | | |
| other workers in the field | | | | | | | | | | | |
| Brown's department and university | | | | | | | | | | | |
| hemophiliacs and their families | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Consequences (4 points; 6-8=4;4-5=3; 2-3=2; 1=1)** | | | | | | | | | | | |
| to Brown's research | | | | | | | | | | | |
| to Brown's reputation and career | | | | | | | | | | | |
| to Brown's claim for priority | | | | | | | | | | | |
| to Brown's students, colleagues, department, and university | | | | | | | | | | | |
| to other workers in the field | | | | | | | | | | | |
| to the journal that publishes the study | | | | | | | | | | | |
| to hemophiliacs and their families | | | | | | | | | | | |
| to science in general | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Brown's Obligations (5 points; 6-8=5; 4-5=4; 3-=3; 2=2; 1=1)** | | | | | | | | | | | |
| to carry out careful, thorough research | | | | | | | | | | | |
| to use sound, objective judgment | | | | | | | | | | | |
| to publish honest reports of research | | | | | | | | | | | |
| to publish in a timely fashion | | | | | | | | | | | |
| to do all he can to help his son | | | | | | | | | | | |
| to use expertise to help other people | | | | | | | | | | | |
| to protect his career and family | | | | | | | | | | | |
| to maintain his integrity | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Reassess (3 points)** | | | | | | | | | | | |
| **Total (20 points possible):** | | | | | | | | | | | |

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# The Bob Bailey Case

Bob Bailey is a fourth-year graduate student in the lab of Professor Peter Martin, and he is not very happy. His research has not been going well recently, and he attributes his troubles to the romantic relationship that Martin has established with another graduate student, Sarah Stern.

Stern is also a fourth-year graduate student in Martin's lab. Both she and Bailey officially joined the lab at the end of their first year of graduate study. Unlike Bailey, Stern has consistently made excellent progress in her research.

Martin is known for running a productive, highly respected, and collegial lab. During the summer after her third year, Stern was surprised but happy to find her collegial rapport with Martin blossoming into a romantic relationship. Although they tried to be as discreet as possible, it was soon common knowledge among the other four graduate students in Martin's lab that he and Stern were "an item." By now, in December, the once-collegial atmosphere has become strained.

In particular, Bob Bailey is starting to show his resentment. He is growing resentful of Stern's research success and the favoritism that he perceives Martin is showing her. Since September, the Martin lab has submitted abstracts to three meetings, and Stern is the first author on all of them. Of the grad students in the lab, Martin has offered to send only Stern to this year's three big meetings in their field. For each, Stern will be traveling and staying with Martin. Last year, Stern went to two of these meetings, and her expenses were covered by Martin's grants. Although Bailey is Stern's contemporary, he has yet to attend a scientific meeting.

Bailey's jealousy and resentment are, however, balanced by genuine concern for Stern. They have been friends since they started graduate school together (though nothing more than friends), and Bailey fears that if Stern's relationship with Martin were to end, this could jeopardize Stern's work in the lab and, in turn, her future career.

It is just before winter break. Bailey has tried to work up the nerve to talk to his friend Sarah or to confront Martin, but he doesn't think there would be any point to it. He doesn't think either of them is thinking clearly, and he thinks that bringing up his complaints and his worries would just make them angry. He is considering taking his complaints about Martin and his worries about Stern to the department chair.

**Should Bailey bring his concerns to the department chair? Why or why not?**

## The Bob Bailey Case

## Part II

After break, Bailey does schedule an appointment with the chair of the department to report his complaint and concern. Bailey finds that the chairperson, David O'Donald, does not know anything about the Martin-Stern romance. O'Donald asks Bailey if he believes that Stern was pressured into this relationship with Martin, or if Stern is unhappy with the situation. When Bailey answers in the negative, O'Donald, who is on Bailey's thesis committee, shifts the topic of the conversation to Bailey's current troubles with his research. After ten minutes, Bailey leaves O'Donald's office pondering. O'Donald's parting words were, "Well, I don't think there's anything to be concerned about with Stern and Martin. They're adults. If some problem arises, let me know, and I can have a chat with Martin. In the meantime, get some work done."

**Should O'Donald adopt the "wait and see" approach that he proposes? Why or why not?**

**The Bob Bailey Case** Name: _____
**Side 1** Date: _____

**Should Bailey bring his concerns to the department chair?** _____ yes _____ no
**Why or why not?**

**The Bob Bailey Case** Name: _____
**Side 1** Date: _____

**Should Bailey bring his concerns to the department chair?** _____ yes _____ no
**Why or why not?**

| Criteria | |
|---|---|
| Issues | |
| Int'd Parties | |
| Consequences | |
| Obligations | |
| Reassess | |
| TOTAL | |

**Notes for Discussion and Assessment**
**The Bob Bailey Case**

**Part I**

This case has two parts. The second part is intended to be used as an extension of the conversation, if time and circumstances permit. Thus, the notes on the second part are not as extensive as on the first. The notes on the second part are followed by excerpts from the Indiana University Academic Handbook that you might find useful as you prepare to lead this discussion.

**1. Issues and Points of Conflict**

**Bailey's and Stern's right to be treated impartially *vs.* Martin's right to exercise his discriminating judgment when dealing with students.**

Graduate students such as Bailey and Stern have a right to expect that they will be treated fairly by their research advisors. Faculty members have a right and a duty to make careful judgments about their students' abilities and to reward them accordingly. In this case, Martin has a right to decide who in his laboratory merits rewards such as travel to scientific meetings.

At the heart of this case is the question of what kinds of relationships should exist in a lab and what should be done when those relationships are strained. It is not clear that Martin's relationship with Stern is appropriate, and it appears that their relationship is having a detrimental effect on the collegiality of the lab, particularly on Bailey's perception of his treatment. The relationship raises serious questions about Martin's impartiality toward Stern and the rest of the students in his lab.

**Bailey's obligation to honor the special relationships he has with Stern and Martin *vs.* his obligation to uphold the rules and standards of the university.**

In addition to his basic obligation to treat Stern and Martin with respect, Bailey has an obligation to honor the friendship he has with Stern and the mentor-protégé relationship he has with Martin. One can argue that these obligations translate into an obligation to speak with them directly before taking his concerns to someone else. However, by the letter of the university's rules, Bailey may be required to report Martin and Stern's behavior to an authority such as the departmental chair regardless of whether the situation can be resolved in some other way.

**Bailey's obligation to protect his own interests *vs.* his obligation to strive for justice.**

Even if, as a result of his self-assessment, Bailey concludes that his lack of progress is not primarily due to the Stern-Martin romance, he may not be free to ignore their relationship. If the relationship is unjust and contrary to university policy, he may be obliged to do something about it for the sake of Stern, Martin, and simple justice. This obligation may arguably hold even if taking steps to resolve the situation could prove costly to Bailey. We cannot morally always ignore an unjust situation even if it has no impact on us, and even if rectifying the situation is inconvenient or worse.

**2. Interested Parties**

**Bailey** has

- a right to expect that he will be treated fairly by the head of the laboratory in which he works, in this case Martin.
- a right to expect that his research advisor, Martin, will foster both Bailey's training and nascent career in science by sending him to scientific meetings.
- a right to expect that his research advisor, Martin, will give him good, impartial guidance.
- an interest in getting an accurate picture of his progress.
- an interest in restoring a collegial atmosphere to the laboratory.

**Stern** has

- an (arguable) right to have a romantic relationship with whomever she wishes.
- a right to expect that her research advisor, Martin, will give her good, impartial guidance.
- a right to expect that her friend will talk to her first before doing something that will affect her as seriously as this would.
- a right to expect that people working together in a laboratory will openly communicate with each other.
- a right to expect that she will be treated as a person, not merely as a desirable sexual object (with certain characteristics such as female, young, attractive, intelligent, naive) to be claimed by a man in power.
- a right to expect that success in completing her degree and her future career in science are not dependent upon continuing a romantic relationship with Martin.
- an interest in avoiding having her name linked to a scandal.
- an interest in having others view her accomplishments as her own, not as due to her relationship with her advisor.

**Martin** has

- an (arguable) right to have a romantic relationship with whomever he wishes.
- a right to expect that he will be the one to determine the distribution of rewards among members of his laboratory.
- a right to expect that he would be the first to be consulted concerning a problem in his laboratory.
- a right to expect open, honest communication with those in his laboratory.
- an interest in avoiding the bad publicity and possible sanctions of a sexual harassment investigation.
- an interest in having a productive laboratory; this is being threatened by resentment and interpersonal conflicts.

**The department chair** has

- a right to expect to be informed of potentially damaging situations in the department.
- an interest in maintaining a perception of fairness among the graduate students.
- an interest in ensuring that each graduate student receives the best graduate training possible.
- an interest in not having the department linked to a scandal.
- an interest in having departmental faculty follow university rules and standards of

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behavior.

**The other graduate students in Martin's lab** have

- a right to expect that they will be treated fairly by their advisor.
- a right to expect that their advisor will foster their learning and nascent careers by sending them to scientific meetings.
- a right to expect that their advisor will give them good, impartial guidance.
- an interest in restoring a collegial atmosphere to the laboratory.
- an interest in not having their advisor, nor themselves, distracted by an investigation and/or scandal.

**The department and the university** have

- a right to expect that faculty will follow university rules and standards of behavior.
- an interest in avoiding bad publicity.
- an interest in fostering productive research laboratories.
- an interest in ensuring good graduate training so as to increase national ratings and success in recruiting graduate students.

**3. Consequences**

There are several possible consequences to Bailey, notably to his **relationships with Martin and Stern**, to his **career**, and to his **reputation**.

If Bailey goes directly to the departmental chair, he could be taking the first step in redressing an injustice in the lab. If Bailey's perceptions are accurate regarding inequities in the lab and the futility of talking to Stern or Martin, perhaps getting the chair to mediate would help Martin to see the error of his ways. Discussing the matter with another faculty member could prompt Martin to start treating the rest of the students, including Bailey, with greater impartiality, or some other just resolution might come about. At the same time, he could further damage his relationship with Martin. If the damage is too great, Bailey may even have to switch labs and research advisors. He also risks destroying his friendship with Stern. In addition, he could get a reputation as a trouble-maker. If everyone else thinks that Martin and Stern have been able to act fairly in spite of their romantic involvement, they are likely to see Bailey's complaint as sour grapes — they may feel his real concern is not with Stern's welfare or even justice in the lab, but only with his own troubled academic career. They may think he cannot accept responsibility for his own problems.

If Bailey discusses the situation with Martin, and possibly Stern, first, he could be able to prompt Martin to take action to improve the situation. Martin may be unaware of the effect his relationship with Stern is having on the rest of the lab. He may also be unaware of the university's rules and standards, as well as possible negative consequences to Stern. If Bailey has an honest, but tactful discussion with him, it may be possible to resolve the situation equitably and without a lot of involvement by others.

It is also possible that he could so alienate Martin that Bailey would have to switch labs. If he has no other faculty member to support him, Bailey may even be forced to leave the department.

There are also possible consequences to others, including:

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**Martin.** If Bailey's complaint to the chair is taken seriously, Martin may face serious consequences. If the university has a rule against the kind of relationship he has with Stern, Martin may be sanctioned for failure to maintain an appropriate mentor-student relationship. Strain may also be placed on Martin's relationship with other faculty in the department, particularly the chair. After all this public scrutiny, Martin will probably have a difficult time re-establishing a productive, collegial lab.

**Stern.** Any ill consequences to Martin will almost certainly affect Stern as well. Even if nothing serious happens to Martin, there is a good chance that Stern may find it difficult to continue her friendship with Bailey when she discovers that he has been complaining about their relationship behind her back. If she and/or Martin decide to terminate their romantic relationship because of Bailey's actions, there will be personal heartaches and continuing strain in the laboratory.

In addition, Stern's accomplishments may be devalued when it becomes common knowledge that she and Martin have been lovers. Women such as Stern, who enter into amorous relationships with their mentors before they have established themselves as independent scholars, often do not receive credit for their accomplishments. There is a tendency to attribute their success to their mentor and discount the women's contributions.

**Martin's lab and department.** If there is a ethical misconduct investigation, Martin's lab and the entire department will be disrupted. However, if Bailey's perception is correct, the lab, at least, is already suffering disruption because of the resentment evoked by Martin and Stern's romantic relationship. This could be the first step toward resolution.

**4. Bailey's Obligations**

**To engage in effective self-assessment of his progress.** Bailey may need to find a third party, preferably someone who can help him analyze his academic progress, to help him distinguish the two problems he faces: Martin's relationship with Stern and his own academic difficulties. The two problems may not be related. It is certainly understandable that he would tend to conflate the two, especially if Martin's relationship with Stern is indeed causing tension in the lab, but Bailey has an obligation to get an accurate picture of his own academic progress. He seems not to see that at least some of his problems predate Martin and Stern's amorous relationship.

**To treat Stern and Martin with respect.** Whatever Bailey decides to do, he has an obligation to treat Stern and Martin with respect. Respectful treatment means refraining from gossip that could damage ether one's reputation. Respectful treatment might mean discussing concerns about the university's rules and standards of behavior with Stern and Martin to learn how they view them and whether they see the resentment building against them.

**To honor the special relationships he has with Stern and Martin.** Above and beyond the obligation Bailey has to treat Martin and Stern as persons worthy of respect, he has an additional obligation to treat Stern with the respect and care due a friend, and Martin with the respect due a mentor. The mentor-protégé relationship between Bailey and Martin obliges Bailey to communicate with Martin in an honest and respectful manner about matters concerning the laboratory.

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**To help Stern engage in an assessment of her interests.** Bailey and Stern are colleagues and friends. Thus, Bailey has an obligation to Stern to help her assess what her interests are and whether they are compromised by the dual role that Martin now plays in her life. This obligation is derived from the two principles of loyalty to friends and self-monitoring and self-regulation within a professional group.

**To learn the rules of his academic institution about the appropriateness of amorous teacher/student relationships.** Most universities have explicit policies about sexual harassment and about amorous or sexual relationships between faculty members and students. For instance, the Indiana University Code of Academic Ethics states that "all amorous or sexual relationships between faculty members and students are unacceptable when the faculty member has any professional responsibility for the student." For more information about the rules at Indiana University, see the material that follows these notes.

**To determine and follow the appropriate procedure in dealing with observations of misconduct.** What Bailey is observing in the laboratory may be unacceptable behavior on the part of Martin and Stern that is undermining the learning environment for Stern, for himself, and possibly for other students. Bailey needs to learn the university's procedures for reporting such cases and then determine the appropriate course of action in this instance. Respect for the appropriate chain of command when reporting such incidents can frequently facilitate a less complicated and more rapid resolution.

**To uphold the rules and standards of the university.** This may require him to report Martin and Stern's relationship to certain authorities in the university.

## Part II

Because this part of the case is an extension of the first, many of the issues, interested parties, and consequences are the same. However, since the protagonist has changed, there are different obligations for him, as well as some additions in the other categories. These are listed below.

### 1. Issues and Points of Conflict

**O'Donald's obligation to foster a departmental environment conducive to good research and graduate training *vs.* his obligation to uphold and enforce the rules and standards of the university.**

O'Donald may be called upon by the university regulations to carry out an investigation of Bailey's accusations or to report this situation to other authorities. In either case, the department will be disrupted, with a concomitant loss in productivity. If he handles things quietly, he will avoid large disruptions, but he may not be following the letter of the rules.

**O'Donald's obligation to take an active role in graduate student training *vs.* his obligation to respect the right of a laboratory head to direct his/her laboratory.**

O'Donald has to consider the legitimate interests of and his obligations toward many parties, including Martin, Stern, Bailey, the rest of the department, and the rest of the university. He has to grant Martin a reasonable degree of autonomy in running his lab, but he also has to protect the best interests of the students in that lab. One of the questions facing

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O'Donald is exactly what constitutes a "reasonable degree of autonomy" for Martin in this case.

**2. Interested Parties**

**Graduate students** have a right to expect that

- members of their thesis committee will give them honest and impartial guidance.
- other faculty members will serve as a check on their relationships with their advisors.

**The department** has a right to expect that the departmental chair will "handle things" with a minimum of disruption to the department.

**3. Consequences**

**If O'Donald adopts the "await and see" approach:**

- Bailey could decide to take his concerns to a higher authority, and O'Donald would then have to contend with questions and accusations concerning his actions, or lack thereof, from university administrators.
- the Martin-Stern romance could become more widely known and discussed. Gossip and resentment could move out from the Martin lab to the department as a whole. In the worst case, the romance could be reported in the newspaper before O'Donald has taken any action at all, including fact finding. This would certainly disrupt the department and harm the reputations of Martin and Stern.
- events may occur that damage Stern's future career. While O'Donald is waiting, Stern may try to end her relationship with Martin and suffer a setback in her progress toward her degree. Alternatively, or in addition, if the relationship becomes common knowledge in Stern's field, her work may be discounted by those who perceive Martin's influence rather than Stern's accomplishments. If either or both of these experiences become too unpleasant, Stern may decide to leave science.

**4. O'Donald's Obligations**

**To foster a departmental environment conducive to good research and graduate training**. One of the functions of a departmental chair is to deal with the bureaucratic, administrative issues and tasks that are required for a functional university but that distract one from teaching and research. The chair has the obligation to minimize the disruptions in the functioning of the department. Therefore, it can be argued that O'Donald has an obligation to deal with this situation in a manner that will cause a minimal amount of disruption to the everyday life of the department.

**To learn the facts of the situation.** At this point, O'Donald apparently has only Bailey's perspective on the situation. He needs to acquire more information in order to make an informed decision. This may include talking to Martin, Stern, and other members of the Martin lab.

**To know and uphold the rules and standards of the university.**

**To respect the right of a laboratory head to direct his/her laboratory.** Professors have an obligation and a right to set the tone and standards for their laboratories and to direct the work of those in their labs. Other faculty members have an obligation to grant this autonomy

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to their colleagues.

**To give honest and impartial guidance to graduate students**, particularly those on whose thesis committees he serves. O'Donald has an obligation to help Bailey solve his research problems. If Bailey's research really is floundering, O'Donald has an obligation to guide him toward a new approach, not just tell him to "get some work done" in order to get Bailey out of his office. If it is unlikely that Bailey will be able to earn his degree or be successful in science, O'Donald and Martin have an obligation to tell him this and not just string him along.

**To take an active role in graduate student training when necessary.** As a member of thesis committees and the chair of the department, O'Donald has an obligation to step in when there are problems in an advisor-student relationship. Other faculty are the only check that graduate students have on abuses that can occur in this relationship. In this case, both Bailey and Stern, and possibly other members of the Martin lab, are experiencing problems in their advisor-student relationships with Martin.

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# The Bob Bailey Case, Part I

## Evaluation Checklist

| | Student's name: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Side 1 position (yes or no) | | | | | | | | | | | |
| Side 2 position (yes or no) | | | | | | | | | | | |
| **Issues and Points of Conflict (5 points; 3=5; 2=4; 1=3)** | | | | | | | | | | | |
| Bailey & Stern's right to fairness vs. Martin's right to autonomy | | | | | | | | | | | |
| Bailey's obligations to Stern and Martin vs. his duty to uphold rules | | | | | | | | | | | |
| Bailey's obligation to protect himself vs. to strive for justice | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Interested Parties (3 points; 5-6=3; 3-4=2; 1-2=1)** | | | | | | | | | | | |
| Bailey | | | | | | | | | | | |
| Stern | | | | | | | | | | | |
| Martin | | | | | | | | | | | |
| department chair | | | | | | | | | | | |
| other students in Martin's lab | | | | | | | | | | | |
| department and university | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Consequences (4 points; 5-6=4; 3-4=3; 2=2; 1=1)** | | | | | | | | | | | |
| to Bailey's relationships with Martin and Stern | | | | | | | | | | | |
| to Bailey's career | | | | | | | | | | | |
| to Bailey's reputation | | | | | | | | | | | |
| to Martin | | | | | | | | | | | |
| to Stern | | | | | | | | | | | |
| to Martin's lab and department | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Bailey's Obligations (5 points; 6-7=5; 4-5=4; 3-=3; 2=2; 1=1)** | | | | | | | | | | | |
| to engage in effective self-assessment | | | | | | | | | | | |
| to treat Stern and Martin with respect | | | | | | | | | | | |
| to honor his relationships with Stern and Martin | | | | | | | | | | | |
| to help Stern assess her interests | | | | | | | | | | | |
| to learn the rules of his institution | | | | | | | | | | | |
| to determine and follow appropriate procedure | | | | | | | | | | | |
| to uphold rules and standards of the university | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Reassess (3 points)** | | | | | | | | | | | |
| **Total (20 points possible):** | | | | | | | | | | | |



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Appendix

## From the Indiana University Academic Handbook

## Code of Academic Ethics

Relations with Colleagues. As colleagues, academic personnel have obligations that derive from common membership in the community of scholars. Such persons respect and defend the free inquiry of their associates. In the exchange of criticism and ideas, they show due respect for the opinions of others. They acknowledge their academic debts and strive to be objective in their professional judgment of colleagues. They accept their share of responsibility for the governance of the University. [Revised 1986.]

Relations with Students. With regard to relations with students, the term "faculty" or "faculty member" means all those who teach and/or do research at the University including (but not limited to) tenured and tenure-track faculty, librarians, holders of research or clinical ranks, graduate students with teaching responsibilities, visiting and part-time faculty, and other instructional personnel including coaches, advisors, and counselors.

The University's educational mission is promoted by professionalism in faculty-student relationships. Professionalism is fostered by an atmosphere of mutual trust and respect. Actions of faculty members and students that harm this atmosphere undermine professionalism and hinder fulfillment of the University's educational mission. Trust and respect are diminished when those in positions of authority abuse or appear to abuse their power. Those who abuse their power in such a context violate their duty to the University community.

Faculty members exercise power over students, whether in giving them praise or criticism, evaluating them, making recommendations for their further studies or their future employment, or conferring any other benefits on them. All amorous or sexual relationships between faculty members and students are unacceptable when the faculty member has any professional responsibility for the student. Such situations greatly increase the chances that the faculty member will abuse his or her power and sexually exploit the student. Voluntary consent by the student in such a relationship is suspect, given the fundamentally asymmetric nature of the relationship. Moreover, other students and faculty may be affected by such unprofessional behavior because it places the faculty member in a position to favor or advance one student's interest at the expense of others and implicitly makes obtaining benefits contingent on amorous or sexual favors. Therefore, the University will view it as a violation of this Code of Academic Ethics if faculty members engage in amorous or sexual relations with students for whom they have professional responsibility, as defined in number 1 or 2 below, even when both parties have consented or appear to have consented to the relationships. Such professional responsibility encompasses both instructional and non-instructional contexts.

1. Relationships in the Instructional Context. A faculty member shall not have an amorous or sexual relationship, consensual or otherwise, with a student who is enrolled in a course being taught by the faculty member or whose performance is being supervised or evaluated by the faculty member.

2. Relationships outside the Instructional Context. A faculty member should be careful to

distance himself or herself from any decisions that may reward or penalize a student with whom he or she has or has had an amorous or sexual relationship, even outside the instructional context, especially when the faculty member and student are in the same academic unit or in units that are allied academically. [Revised 1992.]

* * *

**B. ENFORCEMENT PROCEDURES**

**I. Initiation of Complaints**

Any concerned person may initiate complaints about alleged violations of this code. Such complaints should be brought to the attention of an appropriate chairperson or dean, or to the appropriate Dean of the Faculties or his or her deputy; the Dean of Faculties shall provide for confidential representations regarding such violations. Charges of discriminatory practice may be referred also to the appropriate Affirmative Action Officer.

* * *

**SEXUAL HARASSMENT**

Harassment on the basis of sex is a violation of Title VII. Indiana University does not tolerate sexual harassment of students or employees and responds to every complaint, providing proper remediation when harassment is determined.

Provisions. Employees and students have the right to raise the issue of harassment, and are protected by faculty and staff personnel policies and student codes. Sexual harassment can be a grievous action having serious and far-reaching effects on the careers and lives of individuals. False accusations can have similar impact. Thus the charge of sexual harassment is not to be taken lightly by a charging party, a respondent, or any other member of the University community.

Prevention is the best tool for the elimination of sexual harassment. Each dean, director, department chairperson and/or administrative officer is responsible within his/her area of jurisdiction for the implementation, dissemination, and explanation of this policy. It is the obligation of each faculty, staff, or student member of the University to adhere to this policy.

Definition. Unwelcome sexual advances — requests for sexual favors and other verbal or physical conduct of a sexual nature — constitute sexual harassment when:

1. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or education, or
2. Submission to or rejection of such conduct by an individual is used as the basis for employment or academic decisions affecting such individual, or
3. Such conduct has the effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or learning environment. (Sex Discrimination Guidelines, EEOC, March 30, 1972)

Complaint Procedures. Individuals who believe that they have been sexually harassed should notify either their supervisor, an academic or student services dean or official, and/or

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the campus affirmative action officer. Because of the sensitive and discriminatory nature of charges of sexual harassment, complaint procedures will observe the following principles:

1. Efforts will be made to restrict access to the investigative and grievance procedures to the complainant, the respondent, and those immediate persons involved in processing the matter.
2. The Offices of Affirmative Action shall serve as a resource with regard to interpretation of sexual harassment guidelines. That office, or its designated agent, will advise and consult with either or both parties to the complaint.
3. In the event of a formal investigation of a complaint, the Campus Affirmative Action Officer or the Director of Affirmative Action, as lines of authority indicate, will conduct and/or ascertain that proper investigation and grievance procedures are followed.
4. Investigations will be conducted as quickly as possible, and results will be reported to both parties involved.
5. In the event that a complaint is found valid, action will be taken through appropriate channels of the University to rectify the situation and to assure that such incidents do not occur in the future. University grievance channels for appeal will be open to either the charging party or the respondent. (University Faculty Council, April 26, 1988)

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# The Jenny Ito Case

Jenny Ito is a second-year graduate student working in the biology lab of Chris Holzer. Ito has been overseeing an experiment that Holzer designed to determine whether a special anti-bacterial coating can reduce the incidence of infection associated with the use of steel surgical pins. With Holzer's help, Ito has inserted a two-inch pin into the right tibia of thirty rabbits; fifteen of the pins are standard surgical pins, and fifteen have the anti-bacterial coating. About one-quarter inch of each pin protrudes through the skin. Ito also inocculated all of the rabbits at the insertion point with $1 \times 10^8$ *Staphylococcus aureus* and routinely administers morphine at 5 mg/kg to alleviate any discomfort the rabbits may be experiencing because of the procedure. For almost a month, Ito has cared for the rabbits and recorded her observations, watching for any sign of distress or infection.

In her weekly meeting with Holzer, Ito reports that none of the rabbits seems to be particularly uncomfortable, and none of them shows any signs of infection.

Holzer seems impatient. "If we don't get an infection, we won't learn anything. Here's what we'll do. Since it would be a shame to have put these rabbits through this, not to mention wasting all your time, without getting some results, I want you to help things along a bit. I want you to innoculate all of the rabbits with $1 \times 10^9$ *Pseudomonas aeruginosa*. We'll see what happens then."

Ito hesitates. "The protocol specifies *Staphylococcus*, Dr. Holzer."

Holzer brushes this off. "It's only a small change. We've been approved to run the risk of infecting these rabbits; all we're going to do is give the process a little boost." And with that Holzer walks away.

Ito knows how to do what she's been asked, but she is not sure whether she should. When she goes home that night, she mentions her dilemma to her roommate, Ruth Thompson, an English major.

Thompson snorts. "Why are you so squeamish now? Go ahead and do it. In fact, if you really want to make him happy, you should put the new bacteria on just the untreated pins. That'll prove his point!"

Ito responds, "Thanks for the sarcasm. You know I can't do that; it would be bad science."

"The whole thing is bad science," Thompson retorts. "Torturing bunnies like that."

Ito throws up her hands in exasperation. "You're not helping me at all, Ruth! I know you don't approve of animal experimentation, but sometimes it's necessary, and I'm convinced this is one of those times. Still, *Pseudomonas* can cause a really nasty infection, and I hate to subject the rabbits to it, especially since it's so hard to treat. You know, they're sort of cute and I've gotten kind of fond of them over the last month. And then there's the whole question of the protocol. . . " Ito moans as she throws herself down on the couch.

Thompson takes a deep breath. "Well, your boss has already told you that it falls within the realm of reasonable interpretation of the protocol. You've always got to interpret everything, you know. Besides, you always planned on some of these rabbits developing infections. What does it matter if they're infected by one bacterium or another? Hey, if it makes you feel better, look at it this way: If you don't get results, you'll just have to yank the pins from this batch and operate on a new bunch of bunnies. In the end, it would reduce the suffering if you just brewed up the new bugs and poured them on." With that, Thompson walks away, clearly disgusted by the whole procedure.

Ito does not feel any more sure of the proper course of action.

**Should Ito follow Holzer's suggestion? Why or why not?**

**The Jenny Ito Case** Name: _____
**Side 1** Date: _____

**Should Ito follow Holzer's suggestion?** _____ yes _____ no
**Why or why not?**

**The Jenny Ito Case** Name: _____
**Side 2** Date: _____

**Should Ito follow Holzer's suggestion?** _____ yes _____ no

**Why or why not?**

| Criteria | |
|---|---|
| Issues | |
| Int'd Parties | |
| Consequences | |
| Obligations | |
| Reassess | |
| **TOTAL** | |

## Notes for Discussion and Assessment

### The Jenny Ito Case

A few points of fact will make using this case easier. Overall, the initial protocol as described in the case appears to be appropriate. Rabbits are an appropriate model for this kind of study. *Staphylococcus aureus* is a common wound contaminant and could be isolated from cases of osteomyelitis (bone infection). Staph infections, in most cases, respond well to appropriate treatments with antibiotics. Morphine at 5 mg/kg is an appropriate analgesic.

As Ito suggests, *Pseudomonas aeruginosa* can produce a nasty infection; furthermore, it is resistant to the actions of most antibiotics. Treatment of *Pseudomonas* infections in animals is difficult and usually requires very expensive drugs.[1]

A few points in this case are left unclear, and they might come up in discussion. Morphine masks some of the symptoms of infection. This may be a flaw in the design of the protocol, but it is also possible that the protocol takes the masking effect into account. The case does not make clear whether the anti-bacterial coating is designed to fight off *Staphylococcus* in particular, or is intended to fight a wide variety of bacteria. This has obvious implications for the suitability of Holzer's suggested plan of action. It is also not clear whether it is known how long the coating stays on the pins and is effective.

**1. Issues and Points of Conflict**

**Ito's obligation to follow the protocol *vs.* her obligation to follow Holzer's directions.**

Ito seems to be faced with conflicting duties: following the protocol as approved, and following the directions of her mentor and lab director. Her immediate problem is to determine whether or not this is a real conflict; after all, if Holzer is correct and this is a reasonable ammendment to the protocol, the apparent conflict vanishes. If he is <u>not</u> correct, however, she must think of a way to resolve the conflict.

**Every scientist's obligation to produce useful data *vs.* the obligation to minimize pain and suffering.**

As Ito's roommate, Ruth Thompson, points out, if this experiment produces no results, a different set of rabbits will likely be subjected to the same routine, thus increasing the net amount of suffering. Infecting the set of rabbits that have already been subjected to the surgical procedure with a new kind of bacterium seems more defensible than starting over, but only if the experimental results are not compromised by uncontrolled variables. Bone infections do not manifest themselves quickly; thus, there may be a difference between the treated and untreated pins that is not yet apparent. Consequently, it is not clear that the solution suggested by Holzer is a defensible one. Inducing further pain and suffering for this set of rabbits only makes sense if the results will make a contribution to knowledge. It seems that Holzer and his colleagues, including the IACUC, will need to put their heads together to see if there is clear justification for continuing the experiment. If not, the pins could be removed and the rabbits

[1]Thanks to Catherine M. Vogelweid, D.V.M., Ph.D., of the Indiana University School of Medicine's Laboratory Animal Resource Center, for her help on this case.

allowed to heal. These rabbits may then be available for other, non-surgical research use. (Consultation with a statistician will also help determine whether thirty rabbits are necessary at this stage; perhaps valid results could be derived from a smaller number of subjects.) The possible good to be done for humans and animals can be weighed against the harm being done to the rabbits. Establishing the rationale is part of the approval process and ought to be available to anyone concerned about the justification.

**Ito's obligation to be discreet when discussing matters involving her mentor *vs.* her obligation to explore her own needs and values.**

Each of us is tempted to discuss problems that arise in the workplace with friends and family. We often use this as a way of thinking out loud or letting off steam so we can gather our resources to solve the problem. Often we are not looking for advice as much as an opportunity to vent frustrations and clarify our own thoughts by expressing them to someone uninvolved in the problem. There are times, however, when it is inappropriate to do so, especially if there is a probability that revealing disagreements or confidences of our workplace mentor or colleague could undermine his/her reputation or cause other harm. For example, descriptions of Holzer's suggested revision of the research protocol could be characterized by Ito's roommate as an example of inhumane treatment of animals at the institution and Holzer could find himself the subject of a campaign of animal activists.

**2. Interested Parties**

**Ito** has

- an interest in maintaining a good relationship with her mentor.
- an interest in demonstrating her ability to "do science" well technically, intellectually, and ethically.
- a right to expect that she will not to be put in a compromising situation by her mentor.

**Holzer** has

- an interest in producing good, valid scientific results and not wasting time and resources pursuing research that cannot produce usable data.
- an interest in avoiding trouble with the IACUC or animal rights activists.
- an interest in not violating the conditions of research approved by the IACUC and the university.
- an interest in maintaining his reputation as a responsible researcher.
- a right to expect that his reasonable suggestions will be followed.

**The rabbits** have a right to be spared from needless pain and suffering.

**The funding agency** has a right to expect that the money will be used for good science.

**The scientific community** has an interest in all scientists doing good, responsible science and avoiding new cases of badly done animal experiments that yield no useful data and result in significant pain and suffering for the animals.

**Possible animal and human beneficiaries** have an interest in the improved treatments that might be made available as a result of this experiment. Presumably this experiment is taking place in the hopes of decreasing the incidence of infection among humans and animals who

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need pins to correct broken bones.

**The general community** has a right to expect that scientific research is done in a responsible and humane manner, especially when the research involves living subjects.

**3. Consequences**

There are several possible consequences to Ito, most notably to her **career**, to her **reputation**, and to her **relationship with Holzer**:

If she follows Holzer's suggestion, someone in authority might find out and reprimand Holzer for not following the protocol, in which case Ito will be affected to some degree. If Holzer decides to be deceptive about what was done in the experiment and Ito goes along, they could be found out after publishing, resulting in serious consequences for Ito's reputation and possibly her career.

If she decides to question Holzer further about his suggestion, she may suffer a strained relationship with him, especially if she bluntly refuses to follow his suggestion, approaches Holzer in a confrontational manner or goes over his head. Indeed, depending on Holzer's personality, even the most tactful resistance might have a negative effect on their relationship. A strained relationship with her mentor may have negative consequences for her reputation and for her career. On the other hand, Holzer's respect for Ito might actually increase if she approaches him with her concerns in a professional, carefully considered manner.

There are also possible consequences to other parties, including:

**Holzer**. It is not at all clear that Ito's silent acquiescence would lead to the best result for Holzer. If the IACUC does not see this as a reasonable interpretation of the protocol, he risks some degree of censure. If changing the procedure tempts Holzer to engage in deception, even more is at stake.

**The rabbits**. If Ito infects the rabbits with *Pseudomonas aeruginosa*, their suffering will almost certainly increase, perhaps without producing valid data. If the experiment is stopped, and the pins removed, these rabbits might be used for another study. If Holzer and Ito decide to start over, a new set of rabbits will probably be infected, but at least some valid data may be obtained.

**The IACUC**. If Ito convinces Holzer to clear the change with the IACUC and report the changes in the results, there would be no important negative consequences, and this course of action could actually salvage a valuable research project. If, after review, the agency finds the changes to the research design are not acceptable, it can simply tell Holzer no. If, however, Ito merely acquiesces, the IACUC will have lost control over compliance with its standards and will not be in a position to support Holzer in the event that his research is challenged.

**Holzer's department, his university, and the scientific community in general**. If the research design is flawed and Holzer makes it worse through improvisation, it is possible that Ito, her roommate, or someone else will intentionally or accidentally make the matter public, which could lead to bad publicity, damaging Holzer's reputation and the reputation of his department, his university, and science in general.

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**Future human (and animal) patients and the human community in general**. If Holzer completes the experiment as he intends and the data are not valid, it is possible (though unlikely) that the treated pins will be used on human beings even though they are no better than ordinary pins. This could have many unforeseen consequences, including increased pain and suffering for humans and animals that might have allergic reactions to the coating and increased costs without any corresponding increase in the efficacy of the treatment.

**4. Ito's Obligations**

**To carry out research competently, taking into consideration the suggestions of her research advisor**. Ito cannot merely disregard Holzer's suggestions without any consideration of the loyalty and respect she owes him as her lab director. She is bound by an implicit contract with Holzer to carefully consider his suggestions, perform tasks competently, regularly be present in lab, and so on.

**To act in accordance with the research protocol and the policies of her institution and to learn the conditions under which a protocol can be changed without violating the terms approved by the IACUC.** As a graduate student directly involved with the research, Ito has an obligation to follow the approved protocol as faithfully as possible. Although it may be acceptable to make minor changes in a protocol without submitting such changes for review, Ito suspects that the change Holzer proposes is a major change. Ito may need to learn more about the procedures for getting approval and more about the kinds of changes that can be made without risking censure from the IACUC. Perhaps she and Holzer need to learn to view the IACUC as an ally of the researcher, rather than as a group that is trying to inhibit the freedom of the researcher.

**To treat the animal subjects humanely**. This means administering painful or distressing treatments only if adequately justified and then only to the extent required for the experiment to be successful.

**To seek advice from individuals who can offer her real assistance, such as other researchers, advanced graduate students, the IACUC, perhaps even Holzer**. The issues that Ito faces have less to do with humane treatment of animals and more to do with conducting well-designed, well-executed research that produces publishable results. As Ito questions the validity of carrying out the changed protocol, she needs to develop her rationale for action whether she decides to go along with Holzer's suggestion or to bring the subject up with him again. Consultation with knowledgeable persons will help her develop a rationale based on objective criteria.

**To convey her carefully considered objections in a respectful manner**. If, after careful consideration and consultation with knowledgeable sources, Ito still disagrees with Holzer's suggestion, she has a responsibility to raise her concerns in a respectful and constructive manner.

**To respect the sensitive nature of the research she is involved in by keeping confidential any disagreements over design matters (at least until there is opportunity for careful consideration and reasoned dialogue)**. Given Ruth Thompson's perspectives about the use of animals in research, it seems unfair to discuss this matter with her behind Holzer's back.

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Even if he is wrong, his suggestion may have been the result of a momentary lapse in judgment. Ito may believe that Thompson will respect the confidentiality of her musings, but it is also possible that by discussing this matter she is creating a dilemma for her roommate. If Thompson is strongly opposed to the use of animal subjects in research, she may feel that her obligation to protect the animals takes precedence over her duty to honor Ito's confidence. Ito needs to be careful about initiating this kind of conversation with persons, like her roommate, who lack the knowledge to be able to offer much help with the problem.

**To consider her own needs and values**. Ito is obliged to consider her own best interests within the constraints of ethical conduct. Taking a confrontational, self-righteous stance is unlikely to lead to good results for anyone, least of all Ito. If she proceeds in a calm and professional manner to consider the matter carefully and to outline her concerns to Holzer, the chances of reaching a happy resolution for everyone are enhanced. If, after she talks to Holzer, he is adamant about the change, she will need to consider whether his rationale is convincing. If not, she will need to decide whether the issue is important enough to jeopardize her position in the lab. She is obliged to act ethically and on the basis of reasoned judgment. She is not obliged to be a martyr.

During the course of your discussion, the topic of Holzer's obligations in this situation may come up. Although consideration of her advisor's obligations should not affect Ito's deliberations on what she should do, it may be useful to discuss the PI's obligations with your students. For this reason, we list some of Holzer's obligations below.

Holzer has an obligation

- to act in accordance with the research protocol and the policies of his institution.
- to avoid putting his protégé in a compromising situation by ordering her to act in an unethical manner.
- to train Ito in the responsible conduct of research, which in this case may include making it clear to her why his position is correct (assuming it is).
- to prepare Ito to be an independent researcher.

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# The Jenny Ito Case
## Evaluation Checklist

| | Student's name: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Side 1 position (yes or no) | | | | | | | | | | | |
| Side 2 position (yes or no) | | | | | | | | | | | |
| **Issues and Points of Conflict (5 points; 3=5; 2=4; 1=3)** | | | | | | | | | | | |
| Ito's duty to follow the protocol vs. to obey Holzer | | | | | | | | | | | |
| duty to produce useful data vs. to minimize suffering | | | | | | | | | | | |
| Ito's duty to treat mentor respectfully vs. to explore her own needs | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Interested Parties (3 points; 5-7=3; 3-4=2; 1-2=1)** | | | | | | | | | | | |
| Ito | | | | | | | | | | | |
| Holzer | | | | | | | | | | | |
| the rabbits | | | | | | | | | | | |
| the funding agency | | | | | | | | | | | |
| the scientific community | | | | | | | | | | | |
| possible benefactors | | | | | | | | | | | |
| general community | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Consequences (4 points; 7-8=4; 5-6=3; 3-4=2; 1-2=1)** | | | | | | | | | | | |
| to Ito's career | | | | | | | | | | | |
| to Ito's reputation | | | | | | | | | | | |
| to Ito's relationship with Holzer | | | | | | | | | | | |
| to Holzer | | | | | | | | | | | |
| to the rabbits | | | | | | | | | | | |
| to the IACUC | | | | | | | | | | | |
| to Holzer's department, his university, and to science | | | | | | | | | | | |
| to future patients and human community in general | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Ito's Obligations (5 points; 6-7=5; 4-5=4; 3-=3; 2=2; 1=1)** | | | | | | | | | | | |
| to carry out competent research | | | | | | | | | | | |
| to learn conditions for changing protocol | | | | | | | | | | | |
| to maintain confidentiality | | | | | | | | | | | |
| to seek assistance from appropriate sources | | | | | | | | | | | |
| to convey her rationale respectfully | | | | | | | | | | | |
| to treat the rabbits humanely | | | | | | | | | | | |
| to consider her own needs and values | | | | | | | | | | | |
| **Subtotal:** | | | | | | | | | | | |
| **Reassess (3 points)** | | | | | | | | | | | |
| **Total (20 points possible):** | | | | | | | | | | | |